DOCUMENT RESUME

ED 432 890 EF 005 557

AUTHOR	Lee, Kelvin K.
TITLE	Heritage Oak School: From Obscurity to International Recognition--A Historical Case Study in Participatory School Facility Planning.
PUB DATE	1999-04-00
NOTE	327p.; Ed.D. Dissertation, Brigham Young University, Utah. Original document contains reproductions of photographs and printed materials that may not reproduce well. Some discrepancies between table of contents and text. For related documents, see EF 005 554-556.
PUB TYPE	Dissertations/Theses - Doctoral Dissertations (041)
EDRS PRICE	MF01/PC14 Plus Postage.
DESCRIPTORS	Case Studies; *Educational Facilities Design; *Educational Facilities Planning; Elementary Education; *Elementary Schools; Enrollment; Public Schools
IDENTIFIERS	California

ABSTRACT

The Heritage Oak Elementary School in Dry Creek Joint Elementary School received the 1994 James D. Mac Connell Award from the Council of Educational Facilities Planners International. This case study describes the planning and design process. It discusses the rapid residential growth that initiated the school planning process to reconfigure the K-8 self-contained classrooms into elementary schools that contained kindergarten through fifth-grade and middle schools for the remaining sixth- through eighth-grade students. Also described is the reconfiguration of the traditional 9-month calender to a multi-track year-round calendar, and the joint planning of school sites with the park systems in the school district. Major elements of the planning process discussed are the Board of Trustees' commitment to build community-based schools, community participation in the instructional program design, a comprehensive district facilities master plan, educational specifications designed to the district curriculum, and a participatory design process. The case study demonstrates that the process used to plan and design the school was effective in providing a school facility that met the school district's program needs, school staff, and school community. Appendices contain a collection of supporting documents that relate to the Heritage Oak Elementary School planning and design, and to the award received. (GR)

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HERITAGE OAK SCHOOL: FROM OBSCURITY TO INTERNATIONAL RECOGNITION–A HISTORICAL CASE STUDY IN PARTICIPATORY SCHOOL FACILITY PLANNING

by

Kelvin K. Lee

A dissertation submitted to the faculty of
Brigham Young University
in partial fulfillment of requirements for the degree of

Doctor of Education

Department of Educational Leadership and Foundations
Brigham Young University

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ABSTRACT

HERITAGE OAK SCHOOL: FROM OBSCURITY TO INTERNATIONAL RECOGNITION–A HISTORICAL CASE STUDY IN PARTICIPATORY SCHOOL FACILITY PLANNING

Kelvin K. Lee

Department of Educational Leadership and Foundations

Doctor of Education

The Heritage Oak Elementary School in the Dry Creek Joint Elementary School received the 1994 James D. Mac Connell Award from the Council of Educational Facilities Planners International. The planning and design process that created this award winning school is the subject of this case study.

Prior to the construction of the Heritage Oak School, the Dry Creek School District consisted of a rural school building that was originally constructed in the late 1870s and housed 150 students. During the 1980s, rapid residential growth began and would require the Dry Creek School District to begin a comprehensive district wide planning process. The process included reconfiguration of the K-8 self-contained classrooms into elementary schools that contained kindergarten through the fifth grade

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and middle schools for the remaining sixth through eight grade students. Also included in the reconfiguration of the district was a change from the traditional nine month calender to a multi-track year round calendar, and joint planning of school sites with the park systems in the school district. The major elements in the planning process were: Board of Trustee commitment to build community-based schools, community participation in the instructional program design, a comprehensive district facilities master plan, educational specifications designed to the district curriculum and a participatory design process.

The merits of the process and the resulting school were recognized by the Placer County Grand Jury in their report on school facility design and construction and the Council of Educational Facilities Planners International.

The conclusions reached from the case study indicate that process used to plan and design the Heritage Oak School was effective in providing school facility that meet the program needs of the school district, school staff and school community. The success of the design process relied on a commitment by the Dry Creek School District to a systematic plan built upon the instructional curriculum and involving the stakeholders of the school. A post occupancy evaluation of the school facility by the stakeholders will improve the effectiveness of future schools.

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ACKNOWLEDGMENTS

The completion of a dissertation is not a solitary process. As I have work toward this goal many people have supported me in my efforts. I would like to express my appreciation to those who have encouraged me. The door was opened to my dissertation by Dr. Glen Ovard, my mentor, friend, role model and advisor. Thank you for your support, guidance and encouragement. I wish to extend my thanks and appreciation to the members of my dissertation committee; Dr. Curtis Van Alfen, Dr. J.D. Willardson, Dr. Sharon Gibb and Dr. Clifford Mayes for the time and effort they shared with me in reviewing and improving this case study. The Board members and staff of the Dry Creek Joint Elementary School District created an environment that allowed me to pursue a doctorate while managing a dynamic school district. Your support made it possible to be in two places at the same time. Gordon King and John Stafford, architects and friends that have kept me on target by asking the basic question, "What is the program?" Thank you for the "question" and creativity that turned our vision into the Heritage Oak School. My friends in the Coalition for Adequate School Housing and The Council of Educational Facilities Planners International have provided a forum for me to discuss school facility planning. Thank you for the fertile ground to grow and your support during storms. Dr. Joel Kircheinstien, my "brother" in the educational wars, has been my compass. Thank you for keeping me headed in the right direction, even when I was lost.

The value system that honors hard work and education was instilled in me by my mother and late father, Lucille and James. Thank you for being my parents and raising me in home with love and respect. My children, Christian and Lindsay, have been "working" on my doctorate with me and I thank them for their love, understanding and encouragement during the entire process. Most important, I want to express my deepest appreciation and love to my life partner, friend, editor, coach, inspiration and wife, Shirley, who sacrificed her priorities for me.

TABLE OF CONTENTS

Page

Acknowledgments vii

List of Tables . . . .

List of Figures . . . .

Chapter

1. Background and Reason for the Study 1

Statement of the Problem 5

Statement of Purpose 6

Questions to be Answered 7

Delimitations 7

Definitions of Terms 7

Methodology and Procedures 11

Organization of the Balance of the Study 12

2. Review of the Literature 13

School Facility Planning in the United States 13

Early American Colonial Period 14

Late Colonial Period 16

Nineteenth Century 20

Twentieth Century 24

Between 1919 and Present 30

School Facility Planning Process 32

Long Range Planning 34

Chapter Page

Educational Program Planning 41

Community Use Planning 45

Facility Planning 48

Modernization 53

Orientation and Post-Occupancy Evaluation 55

3. Case Study of the Heritage Oak Elementary School 59

Introduction 59

Historic Description of the Dry Creek School District 60

Dry Creek School District 1870 to 1980 62

Planning Process from 1980 to 1990 67

School District Facility Master Plan 69

Facilities Master Plan Advisory Committee 72

City of Roseville General Plan Review:
Public Facilities Element 75

Funding Partnership for Facility Master Planning 79

Instructional Program Configuration 80

Master Plan Elements 83

Division I: Educational Program 83

Division II: Educational Facilities 84

Division III: Demographic Study 84

Division IV: Implementation Plan 86

Division V: Master Plan Updating and Evaluation Procedures 90

Chapter Page

Initial Facilities Master Plan 91

Instructional Program 93

Designation of the Heritage Oak Elementary School Site 94

Instructional Programing: Educational Specifications 96

Educational Specifications Process 97

Description of the Participants 98

Description of the Process 99

Educational Specification 103

Section 1: Introduction 104

Section 2: Curriculum To Be Taught 105

Section 3: Educational Outcomes 106

Section 4: Discernable Trends 107

Section 5: Teaching and Learning Activities . . 108

Section 6: Orientations and Relationships 109

Section 7: Internal Traffic 111

Section 8: Furniture and Equipment 112

Section 9: Utilities 113

Section 10: Special Requirements 113

Section 11: Storage 114

Section 12: Enrollment 115

Summary of the Educational Specifications Process 116

Designing Heritage Oak Elementary School 117

Chapter Page

Charette Process 118

Description of the Participants 121

Design of the Heritage Oak Elementary School 122

Kindergarten Room 123

Standard Classroom, Grades 1-5 125

Multipurpose Building 129

Administration/Library Building 135

Office-reception Area 135

Principal's and Assistant
Principal's Offices 137

Conference Room 137

Teachers' Lounge 141

Special Education Services 142

School Library 146

Computer Laboratory 149

Teachers Workroom 151

General School Site 152

Play Fields 152

Hard Courts 154

Parking Lot 155

Child Care 155

Construction of the Heritage Oak School 156

Chapter Page

Post Occupancy Evaluation 157

Summary 160

Independent Recognition 161

Placer County Grand Jury 161

James D. Mac Connell Award 163

4. Summary, Findings, Conclusions and Recommendations 167

Statement of the Problem 168

Statement of Purpose 169

Questions to be Answered 169

Delimitations 170

Methodology and Procedures 170

Summary of Findings 172

Question 1 172

Long Range Planning 172

Instructional Program Planning 172

Community Needs 172

Building Specific Planning 172

Post Occupancy Evaluation 173

Modernization and Reconstruction Planning 173

Estimated Cost 173

Question 2 174

Chapter Page

School District 174

Community 174

Question 3 176

Systematic Planning Process 176

Long Range Analysis 177

Adequate Time and Resources 177

Inclusion of Stakeholders 178

Expert Consultants 179

Qualified Architectural Firm 180

Question 4 180

Question 5 181

Conclusions 181

Conclusion a 182

Conclusion b 183

Conclusion c 185

Conclusion d 185

Recommendations 186

Recommendation for Action 186

Recommendation for Further Research 186

Report of Significant Post Study Events 187

References 189

Appendix 203

LIST OF TABLES

Table Page

1. K-8 Dry Creek School District Student Enrollment & Growth Patterns 10 Year Trend Analysis 70

LIST OF FIGURES

Figure Page

1. Regional Map Dry Creek School District 63
2. Dry Creek School District Boundary Map 64
3. Educational Specifications Committee 100
4. Table of Contents Educational Specifications 102
5. Floor Plan: Kindergarten Building 124
6. Floor Plan: Classroom/Workroom Building 126
7. Floor Plan: Multipurpose Building 130
8. Floor Plan: Administration/Library Building 136
9. Site Plan: Heritage Oak Elementary School 153

CHAPTER 1

BACKGROUND AND REASON FOR THE STUDY

The condition of school facilities across the United States has become a major topic of interest and concern by legislators, newspaper reporters and officials of the federal government. They are all aware that school facilities are considered either public assets or public liabilities (Health Education and Human Services, 1995). Public school buildings have been reported to be the landmarks that can unify a community, or the symbols that identify inequitable distribution of instructional opportunity. Limited funds to construct and remodel school facilities have created questions of educational equity resulting from new students requiring new classrooms and new curricula requiring improvements of existing classrooms. The one element that is commonly agreed upon by all involved in this issue is the extraordinary cost necessary to build and modernize public school facilities.

The United States will spend tens of billions of dollars in this decade to remodel, retrofit and construct public schools (Education Writers Association, 1989). In a recent report to the U. S. Congress, the Health Education and Human Services Division of the General Accounting Office estimated that it will cost more than $112 billion to modernize, retrofit and replace existing school facilities to meet the requirements of modern curricula and the addition of required programs and services thrust upon school districts (Health Education and Human Services, 1995). A summary of a national survey conducted in 1988 reports that of the 88,000 school buildings in the United States, more than half were constructed before 1959. Twelve percent of all schools in this country are structurally inadequate (American Association of School Administrators, 1992), and 25% are "shoddy places for learning" (Education Writers Association, 1989).

The California Department of Education recently completed the publication of a series of educational reform documents that described educational reform from kindergarten through 12th grade. The four documents move instruction and curricula in new directions and anticipate the skills that will be necessary for children to be successful in the 21st century. Reform documents have already begun to influence instructional change in California and elsewhere. The additional requirements of programs such as year-round education, special education, bilingual education, instructional technology, joint use with various community groups and integrated social services have created a need for school facilities that are significantly different from their existing prototypes (Education Writers Association, 1989).

In addition to the problems of aging and obsolete school facilities, several areas of the United States are experiencing significant growth in student enrollments. American public education will experience a growth in student enrollments from the current 45 million to 49 million by the year 2002 (Argon, 1995). The costs of the classrooms needed to meet these enrollment increases are in addition to the costs of school facility modernization. Glass indicates that the total cost of building new public schools in the next decade will be more than $1 billion (Glass, 1991).

When added to the cost of modernizing existing school facilities, the quarter-trillion-dollar national need for school facilities and their improvements begins to give some perspective to the importance of the problems facing public policy makers and education leaders across the United States.

With the challenge of providing new and renovated school facilities, a unique opportunity will emerge that will have a lasting and significant influence on the quality of education in our public schools. That opportunity will be to design school facilities that will allow the maximum expression of both the curricula taught in each district, and the anticipated instructional changes that will occur during the lives of these facilities (Castaldi, 1992). Those school districts that choose to invest their time and resources in adequate planning of their facilities will have buildings and sites that will respond to the 21st century curriculum in both form and function. Although such advanced planning seems prudent, it has been the exception rather than the rule in most school districts. A report of a national conference held on architecture and education indicated that for the last two decades very little had been done, or is being done, by either educators or architects to improve the decisions involved with the designing, renovating or expanding of school buildings (Moore, 1992).

Another indicator of the reduction in the emphasis placed on planning school facilities can be inferred from a 1990 study reporting that during the last decade, university and college departments of educational administration nationwide have eliminated requirements and electives relating to school facility planning (Glass, 1991). In addition, the retirement of many professors and consultants skilled in school facilities planning will exacerbate the problem of trying to provide adequate school facility planning (Glass, 1990).

Those school districts willing to engage in a process of master planning their school facility needs are having difficulty obtaining reliable information and resources to design their facilities. With the lack of adequate long-range planning, facilities will be ill prepared to serve the current curriculum and unprepared to meet the instructional requirements of future curriculum reforms. The irony of this situation is that well-planned school facilities have a positive effect of on the education of students (Burbaker, 1988; Christopher, 1990; Hawkins, 1989; Lane, 1991; Weinstein, 1979).

Effective planning of school facilities is an inclusive process that brings together the instructional program with the desires of the teachers, administration, community, students and design specialists. It produces a facility that can meet the needs of those who will use it for many years and that will provide spaces that will support the programs and staff using the facility (Castaldi, 1994).

An example of successful planning by a school district has been identified in the Dry Creek Joint Elementary School District. With an innovative process, the district was able to plan, design and construct a school that addressed the issues described in this chapter. The process was ultimately validated in the fall of 1994 by the Council of Education Facility Planners International (CEFPI). Heritage Oak Elementary School, the first school built in Dry Creek District in more 100 years, was named the winner of the James MacConnell Award. This award annually recognizes the best example of planning and design from its international membership at its annual conference. The award recognized the efforts of Dry Creek School District to provide a facility that addressed the current and future needs of instructional programs and community expectations. The

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award had added significance because Heritage Oak School was constructed under a state-imposed budget and space allowance while other competitors were locally funded and were without the constraints imposed on Heritage Oak School.

In 1983 the Dry Creek Joint Elementary School District, a rural, single-school district in Roseville, California, embarked on a facility planning process to construct its first new school in more than a century. The planning process was precipitated by rapid residential development that would swell the enrollment of the district from 150 students to more than 6,000 students in less than 15 years, making Dry Creek one of the fastest-growing districts in California. To meet the emerging needs of the school district, a comprehensive planning process was initiated that would eventually identify the organization of grade level configurations, size and locations of the new schools and a plan to design the new schools that would be needed in the future. In the fall of 1992, Heritage Oak Elementary School was dedicated as the first of a new generation of schools to be planned, designed and constructed in Dry Creek District.

In 1994 CEFPI identified Heritage Oak School in the Dry Creek Joint Elementary School District, through international competition, as an example of excellence in planning, design and cooperation in the construction of a school facility. By describing this process and the related events, it provided other school districts with insights that may help them in the planning of their facilities. Although the process was used to plan and design a new facility, the process could be adapted to the needs of those school districts that need to remodel or modernize existing facilities.

Statement of the Problem

Public school facilities throughout the United States are being constructed and renovated as local school districts respond to the needs of changing curricula, technology and community expectations. Often these construction projects represent the design efforts that respond to the immediate needs of the school district and the constraints of their budgets. Little thought is given by school boards and administrators to the long-term investment being made in the instructional environment for their students, staff and community. The conflicts that can arise from program and facility needs, energy accessibility and conservation, renovation and demolition are among the issues seldom considered in the planning of a school. Simply stated, systematic planning of our public schools is often the least considered element in the entire construction process. Yet the resulting facility will have a long-lasting effect on the instructional curriculum, lasting between fifty and seventy years, and making a statement about the commitment on the part a community to its public education system. For those school districts that wish to plan their school facilities by incorporating a systematic process, there is little practical information available. Even more disturbing is the lack of trained professional personnel that could assist these school districts. For these reasons a historical/case study describing an acknowledged successful process to plan and construct a school facility would be valuable to those who are stakeholders in the building of school facilities.

Statement of Purpose

The purpose of this historical/case study is to describe the district facility planning process used by the Dry Creek Joint Elementary School District. The Dry Creek School District, at this time, consisted of one small K-8 school administered by a superintendent/

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principal. The process produced a new facility that would meet the requirements of a changing instructional curriculum, increasing community expectations and advances in instructional technology. The facility planning process was internationally recognized for its success by an independent jury from the Council of Educational Planners International.

Questions to be Answered

This historical/case study is designed to answer the following questions: (a) What are the elements of a successful planning process? (b) What individuals and organizations are important in the planning process? (c) What are the critical decisions that impact the planning and design process? (d) Why was the Heritage Oak Elementary School selected as the 1994 James D. MacConnell Award winner? (e) What modifications should be made to the process in designing future schools?

Delimitations

This case study will be delimited to the polices, process and events used to plan, design and construct Heritage Oak Elementary School in the Dry Creek Joint Elementary School District, and to the historical information relative to this process.

Definition of Terms

For the purpose of this study, the following terms were defined:

California Environmental Quality Act: A law that requires any substantial change in the environment to be analyzed in a formal process and subject to public hearing prior to the adoption.

Charette: An intense process used to design a facility that requires participation of an architect and stake holders of the facility.

Council of Educational Facility Planners International: A national organization formed in 1922 to develop minimum standards of school building construction and equipment to meet educational needs.

Cohort survival rate : A student population projection methodology developed at Ohio State University used in estimating the number of students who would pass from one grade to the next.

Dame School: A small gathering of elementary-aged children instructed by a single female member (Dame) of the community.

Designated Instructional Services: A special education program that provides specific services for identified students.

Direct Service School District: A designation of school districts in California that have less than 1000 students and receive support services from a county office of education.

Educational Specifications: A document used in the planning and design of school facilities that describe the linkage between the instructional program of the school and the design of the facility.

Environmental Impact Report (EIR): A report describing the environmental effects of a proposed change and the mitigation necessary to address identified significant adverse effects.

Facilities Master Plan Advisory Committee FAMPAC: A facilities advisory committee to the Board of Trustees of the Dry Creek School District composed of representatives from the school board, administration, teachers, and community.

Field Act : An action of the California legislature (1933) that mandated seismic standards for public schools.

Free common schools: Schools open to students without charge and financed through taxation of the populace.

General Plan: A land use document adopted by the local agency that describes the policies, practices and level of services that will be provided in within it jurisdiction.

James Mac Connell Award: An award of the Council of Educational Facility Planners International in honor of the memory and work of Dr. James Mac Connell. The annual award recognizes school facilities that demonstrate outstanding planning and design in meeting the educational needs of their students.

Kiva: A space semi-isolated for small group instruction within a larger space.

Morrill Act of 1862: Federal legislation that allowed federal grants of land to each state for the purpose of opening a college or university that would conduct research and provide instruction in the fields of agriculture and mining. The institutions were also required to include general education course in their academic programs.

Multiple factor student projection: A student projection method that recognizes the dynamic nature of a community and relies on multiple sources of information in making student enrollment projections.

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Lancaster System: A type of education popular around 1826 named after Joseph Lancaster in which one student would learn a concept and then teach other students

Latin Grammar School: A colonial school for students between the age of seven and fifteen who were taught classic studies in preparation for entrance to Harvard.

Progressive Movement: An educational philosophy based on the work of John Dewey that includes children in age appropriate learning activities rather than sitting in classrooms and listening passively.

Post-occupancy evaluation (POE): An evaluation of a school facility to determine if the design and construction meet the expectations of the school district and the community

Quincy Box: The name of an architectural design for elementary schools named after the Quincy Grammar School in Boston (1847). The design was generally a four story brick building with an attic and basement. Classrooms were cubicles with in the square school building.

Resource Specialist Program (RSP): A special education program that provides services to identified students with learning disabilities for less that 50% of their instructional day.

Richter Scale: A scale used by seismologist to measure the strength of earthquakes

Smith-Hughes Act of 1918: A federal program that matched state funds to provide high school vocational education at the college level.

Special Day Class (SDC): A special education program that provides service to identified students with learning disabilities for more than 50% of their instructional day.

Specific Plan: A planning planing document that describes the proposed specific types of land use within a define area.

Severely Handicapped Program (SH): A special education program that provides services to identified students with severe server instructional, physical and/or medical needs.

Tentative Map: A document filed in the land use planning of an area that indicates the proposed type and use of the acreage under discussion.

Methodology and Procedures

The methodology described in this document is a historical case study (Gay, 1992). The case study describes the process and events employed in the planning, design, construction and post-occupancy evaluation of Heritage Oak School. A review of the related literature, documents, proceedings and public records describe the process and procedures that affected this process. These include the following: (a) reports from journals, professional meetings and conferences held to discuss school facility planning in the United States, with emphasis on school facilities in California; (b) district documents, minutes from the district Board of Trustee meetings, task force reports, special studies commissioned by the district and other district records; (c) land development plans for the City of Roseville and Placer and Sacramento Counties; (d) reports from consultants contracted by the district during different periods of time; (e) reports from district planning task forces composed of teachers, administrators, parents, community members and business leaders in the planning process; (f) legal opinions, briefs, appeals and court decisions concerning school facilities provided by special counsel to the district, general counsel of the district and by attorneys filing "amicus" actions for the district; (g) California legislation impacting the planning process of the Dry Creek, particularly legislation that affected design and funding of public schools; (h) reports of actions by the local governmental planning agencies, and the applicable city/county regulations, policies, and practices; (i) joint use agreements created between the City of Roseville and Dry Creek District; (j) the application and jury comments of CEFPI related to the selection of Heritage Oak School as winner of the James D. MacConnell Award; (k) the post-occupancy evaluation of Heritage Oak School conducted by the district and its architect.

Organization of the Balance of the Study

The balance of this report is organized as follows: Chapter 2: Review of Related Literature; Chapter 3: Report of Historical Case Study of the Award Winning Heritage Oak Elementary School; Chapter 4: Summary, Findings, Conclusions and Recommendations.

CHAPTER 2

REVIEW OF THE LITERATURE

School Facility Planning in the United States

Throughout the history of American public education, many changes have taken place in the purposes and goals of the instructional curriculum, teaching strategies and the design and construction of school facilities. The home schools of the pilgrims have evolved into the complex learning and behavioral activities that are associated with our public school system. In a similar fashion, the schoolhouse is no longer a simple one room structure. The school facility of today is a complex, engineered building, designed to house a variety of educational functions and community activities. The facility is constructed to last at least half a century, and during this time, to operate with energy efficiency and low maintenance.

The early one-room, self-contained schools have become facilities that house several hundred to several thousand students. In these modern facilities there are rooms and spaces designed and used for traditional, as well as unique instructional activities. These spaces are the result of planning and design processes that have attempted to meet the needs of an evolving instructional program.

This chapter is a brief history of the changes that have taken place in American education and the impact these changes have made in the planning, design and construction of our public schools.

Early American Colonial Period

During the early colonial period of American history, the responsibility of educating children rested primarily on the family and the church. When not being instructed by their parents, many children attended a church-operated school. Teachers in these church schools were often lay members of the church who were assigned to work with the children of the congregation. The curriculum was basic: instruction in religion and morality, using the Bible, the Hornbook with the Lord's Prayer printed on it, the catechism, and the New England Primer (used for more than 100 years in the classroom) (Callahan, 1956). Spiritual teachings of each religious denomination supplemented the curriculum.

Beyond the education that children were receiving in their churches, other means of instructing children began to emerge in the colonies. In the southern colonies, many plantation owners hired tutors to educate their families. In the middle-Atlantic colonies, diverse religious beliefs resulted in teachers with diverse backgrounds; the curriculum of each school varied according to the beliefs of the teachers. The middle colonies also saw the rise of what became known as the "Dame School." The Dame School was a small gathering of elementary-aged children instructed by a single senior female member (the dame) of the community.

The New England colonies had many large villages that were organized around the authority of the church. The various local civic organizations respected the influence of the church, but it was the State of Massachusetts that became an early leader in the establishment of public schools.

In 1635, fifteen years after the pilgrims landed at Plymouth Rock, Boston, Massachusetts, opened a Latin grammar school. A year later, Harvard College opened its doors. Laws were passed in 1634 and 1638 requiring all persons to pay taxes for community projects, which set the precedent for later taxes to support public services such as schools. In 1642 and 1647 the Old Deluder Satan Acts became the first form of compulsory education laws in the United States. These laws established that a teacher was required in every township that had fifty families, and a grammar school in every township that had one hundred or more families (Cubberley, 1934; Wheelwright, 1901).

The grammar school of the day was a building with a single room constructed to house the education of the children (Lowe, 1991). The one-room schools were crude, accommodating 20-30 students with a fireplace or wood burning stove. It might have a large slate board, as well as a bell and tower for the purpose of ringing in the school day (Ryan & Copper, 1988). Upon entering, the students might find a small vestibule with hooks for their coats. If there was no vestibule, the students would enter the classroom and deposit their coats and hats by the chimney (Johansen, Collins & Johnson, 1988). Benches were either attached to outer walls so students would face the center of the room or placed in rows and made of "slabs which were supported by four straddling wooden legs set into auger holes" (Knight, 1951, p. 416). Windows were often created by short-sawing boards or by omitting a log from one entire side of the building. Some buildings had only one small window, while others had window space the length of one wall. In either case, the vacant area served to light and ventilate the room. Often a plank used for a writing desk extended the length of the window space. Animal skins, pages from old books or wooden boards were used to block out the cold and the rain or snow. As time passed, glass panes became available to fill the window openings, but even with the benefits of both kerosene and natural lighting, it was not unusual for the interiors of these schoolhouses to be cold, dreary and depressing (Knight, 1951).

The typical school day for a colonial teacher would begin in the early morning when he would arrive at the small schoolhouse, polish and straighten the desks, sweep the floors, tend to the fires on a cold day and prepare for the arrival of the students. When they arrived, students of all ages would take their places on backless wooden benches (Ellis, Cogan & Howey, 1981).

The one-room schools were simple spaces with a source of heat and light, and a place to write (Castaldi, 1994). The classrooms were drab, poorly ventilated and did not create an effective learning environments (Gulliford, 1984).

Late Colonial Period

From 1635 to 1750 the dominant type of secondary school in colonial America was the Latin Grammar School. Pupils entered at the age of seven or eight and remained until the age of fifteen. During that time the pupil was expected to prepare himself to meet the entrance requirements of Harvard (Callahan, 1956).

In the early 1700s, demand gradually arose for a different type of secondary curriculum, fueled by increased trade and commerce within the colonies, and the need to have more men educated in business practices. This demand lead to the establishment of a few private secondary schools. These private secondary schools taught subjects of a practical nature, such as arithmetic, navigation and surveying. To meet the needs of their students, many of whom worked, these courses were offered both during the day and in the evening (Callahan, 1956).

Benjamin Franklin opened a private secondary school in 1750. Like other private schools, Franklin's Academy expanded the traditional secondary curriculum beyond Latin and Greek to include modern languages and instruction in practical subjects. The additional subjects included history, geography, logic, rhetoric, algebra, geometry and astronomy. Franklin's Academy, which became the University of Pennsylvania, was the first of several academies that were founded before the start of the Revolutionary War. Among these new academies were Phillips Academy at Andover, Massachusetts, established in 1778, and Exeter Academy at Exeter, New Hampshire, in 1783 (Callahan, 1956).

During the same period that private academy schools were being established, William and Mary College (1693) in Virginia and the first state college in Connecticut (1701), later known as Yale, opened. The missions of both new colleges were similar to Harvard's, the training of ministers. Other religious denominations also began to open colleges. Presbyterians opened the College of New Jersey, which became Princeton, Washington and Lee College in Virginia, and Davidson College in North Carolina. Baptists opened Brown College in Rhode Island and the Dutch Reform Church opened Rutgers in New Jersey (Callahan, 1956).

All of these colleges were affected by the success of the private academy schools. Eventually, each college expanded its original course of study to include instruction about topics of a practical nature. While keeping the training of ministers as its main purpose,

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Harvard College expanded its curriculum to include logic, physics, ethics, politics, arithmetic, geometry, astrology, Latin, Greek and Hebrew (Callahan, 1956). The spirit of this period of college curricular expansion (beyond the work of the cloth) was expressed by Samuel Johnson, president of Kings College:

> A serious, virtuous and industrious Course of Life being first provided for, it is further the Design of this College, to instruct and perfect the Youth in the learned Languages, and in the Arts of Reasoning exactly, of Writing correctly, and Speaking eloquently, And in the Arts of Numbering and Measuring, of Surveying and Navigation, of Geography and History, of Husbandry, Commerce and Government; and in the Knowledge of all Nature in the Heavens above us, and in the Air, Water and Earth around us, and the various Kinds of Meteors, Stones, Mines and Minerals, Plants and Animals, and every Thing useful for the Comfort, and the Convenience, and Elegance of Life, in the chief Manufactures relating to any of these Things, And finally, to lead them from the study of Nature, to the Knowledge of themselves, and the of God of Nature, and their duty to Him, themselves and to one another; and every Thing that can contribute to their Happiness both here and here after. (Knight, 1951, pp 82-83)

The period of time just before the Revolutionary War was important because of the intellectual debate that was occurring about the future of our nation. The concepts of democracy, freedom, equality and individual rights were conceived, discussed and later built into our basic political framework through documents such as the Declaration of Independence, The Bill of Rights and The Constitution of the United States.

While schools and education are not specifically mentioned in the Constitution, there is little argument that education was important in the founding of our nation. Two comments made by the framers of the Constitution indicate the priority that education had in the earliest days of our nation. President George Washington in his 1796 farewell address said, "Promote then, as an object of primary importance, institutions for the general diffusion of knowledge. In proportion as the structure of government gives force

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to public opinion, it is essential that public opinion should be enlightened." Thomas Jefferson's statement on education in the United States is classic: "If a nation expects to be ignorant and free in a state of civilization, it expects what never was and never will be" (Callahan, 1956, p. 125).

From these statements and the language in the 10th Amendment to the Constitution, giving powers not expressed in the Constitution to the states, the process of educating our nation became the priority and responsibility of each state. The early colonial states wrote this power into their constitutions. Pennsylvania's state constitution describes the state's duty to provide educational services to its residents, stating:

> A school or schools shall be established in each county by the legislature, for convenient instruction of youth, with such salaries to masters, paid by the public, as may enable them to instruct the youth at low price, and all useful learning shall be duly encouraged and promoted in one or more universities. (Callahan, 1956, p. 121-122)

Other states followed the lead of the original thirteen and wrote into their constitutions language supporting public education. An example is in the Indiana state constitution, ratified in 1816, which states:

> It shall be the duty of the general assembly, as soon as circumstances will permit, to provide by law for a general system of education, ascending in a regular graduation from township schools to a state university wherein the tuition shall be gratis, and equally open to all. (Callahan, 1956)

The Northwest Ordinances of 1785 prescribed that each state must give one section of each township (Section #16, 640 acres) in all undeveloped areas to be used for education. Later the number of sections dedicated to education were increased to two, and still later, four sections in some of the western states. The Northwest Ordinance of 1785 encouraged settlers to move into new lands, and schools were considered a desirable incentive.

The last part of the 18th century saw the establishment of the first public school system in Massachusetts. Laws were passed and implemented in 1789 and 1801 establishing school districts as the basic organizational pattern for public education. Under the legislation, the school districts could elect a school committee or board, raise funds by taxation, hire teachers and supervise the operation of the school district (Callahan, 1956). This simple and democratic system of local public education became the dominant pattern for school districts throughout the nation.

Grammar school curriculum and school design changed very little through the 18th century. The notion of a simple and basic space where student and teacher could come together continued to be the design of choice. Even the first public school system established in Massachusetts had little impact on the design of school buildings. District schools were designed around a single large room that could be divided into smaller spaces with movable partitions (Wheelwright, 1901).

Nineteenth Century

The early part of the 19th century was a period of stability, growth and industrialization. Immigrants were coming in large numbers, railroads were being built, the frontiers were being settled and public schools, free and open to all, became a major political issue. Advocates such as Horace Mann and James Carter in Massachusetts, Lyman Beecher and Calvin Stowe in Ohio, Henry Barnard in Connecticut, Thaddeus Stevens in Pennsylvania and citizens throughout the land rose up and fought for "free common schools" (Callahan, 1956). Their struggle was one to provide free schools supported through taxation of the populace. The basic elements of the common school were that:

> 1. The common school would be free and open to all. It was thought that no other system, least of all the dual system used in Europe, was acceptable for a democracy.
> 2. The common school would be of such excellent quality that all parents would be willing to send their children.
> 3. The common school would be common in the sense that all children would attend, and that it would serve as a unifying force to weld communities together. This was of particular importance, since large numbers of immigrants were pouring into the country and had to be assimilated. It was also thought that if children from all classes attended the same school that they would understand each other and the class conflicts that were causing so much difficulty in the old county might be avoided.
> 4. The common school would be publicly supported through taxation of the community.
> 5. The common school would be publicly controlled through elected or appointed public officials, responsible to the whole community and not to any particular political, economic or religious group.
> 6. The common school should be non-sectarian in character. Mann's view was that morality could be taught without teaching the tenets of any particular sect.
> 7. The common school provide the basic knowledge and skills essential to enable students of diverse backgrounds to assume the responsibilities of citizenship in the young Republic (Cremin, 1951).

During this period schools became funded through taxation, and students were separated into elementary and secondary levels. The placement of students into grade levels became the pattern of organization within most schools. This was also the time that kindergarten was introduced into the instructional programs of public schools (Callahan, 1956; Good, 1956).

In addition to the traditional grade level configurations, an alternative style of education, known as the Lancaster System, arose in the new nation. Used mainly in

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Maryland beginning in 1826, it was quickly abandoned because it failed to deliver on its promise of quality education and inexpensive cost. The Lancaster System, named after education innovator Joseph Lancaster, claimed that through mutual effort, one person learning and then teaching others, a cost-effective method could be implemented that would have one person teach "any number of students from 50 to 1000"(Raleigh Register, 1814). The design of a schoolhouse used for this type of instruction required a large open space with benches along a wall, where the information gained by the first student could be transferred to other students. Alexander Bell challenged Lancaster, asserting that he developed the method exploited by Lancaster, but contested Lancaster's claims about the system, describing it as "those knowing little teaching those who know less" (Knight & Hall, 1951, p. 133).

The Lancaster System's demise began as public interest grew around the subject of public education, as the material prosperity of the people increased and when the citizens recognized the need for public schools funded through taxation. Demands for quality education overcame the desire for an inexpensive teaching methodology, of questionable results.

As each territory became a state, a state office of education was formed and a state superintendent of schools was selected. The purpose of the state office of education and the state superintendent of education was to maintain an organization of local school districts that was governed by a locally elected board, an appointed district superintendent and school site administrators (principals or headmasters) (Callahan, 1956). Two-year "normal schools" were also introduced to train and provide qualified teachers for local school districts (Callahan, 1956; Good, 1956).

The increased training provided to teachers, along with expanded studies offered at many colleges and universities, created a need to expand some of the instructional offerings in the elementary curriculum and to add more courses in the secondary schools. Secondary curricular offerings included modern languages, chemistry, physics, zoology, botany, English, history, geography, manual arts, and commercial subjects. The classical subjects taught in the early grammar schools were still offered, but enrollments decreased, except for those required in preparation of college entrance (Callahan, 1956; Good, 1956).

During the last half of the 19th century, our nation was engaged in the Civil War. The resources of the nation were focused on the war effort and little happened in the public schools. Only after Reconstruction began and established some normal routines did education begin to return as a part of the nation's agenda.(Callahan, 1956).

By the close of the century a United States Office of Education had been established, secondary schools were being subjected to accreditation standards, and many new state-operated colleges and universities opened their doors (Callahan, 1956). The Morrill Act of 1862 added incentives for opening post-secondary programs. This federal legislation allowed grants of federal land to each state for the purpose of opening a college or university that would conduct research and provide instruction in the fields of agriculture and mining. These land grant institutions were also required to include general education courses within their academic programs.

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During the 19th century schools in large cities enrolled greater numbers of students at each facility. Expanded elementary schools became organized in a manner more like those operated in Germany, with separate classrooms for each grade. The enlarged schools were adaptations of other buildings without consideration of the needs of the teachers or students. Alfred Roth describes this period of school design as buildings that "took no account of its nature or various functions" (Roth, 1957).

Evidence existed that some architectural consideration for the educational program of a school occurred during the mid-1800s. Edmund Wheelwright in his 1901 book, School Architecture: A General Treatise For Use of Architects and Others , credits E. R. Robson as having written the most complete current work on school architecture. Robson's 1874 book, School Architecture , was based on an 1854 work written by H. Barnard, Esq., Superintendent of Connecticut Schools (Wheelwright, 1901). Barnard's volume on school architecture was prepared as a result of a definite need for standards in schoolhouse planning. Dr. Barnard collected and interpreted standards for the locations, styles and construction of schoolhouses. The need for standards grew out his wide knowledge about the conditions of schools in the 1800s (Engelhardt, Engelhardt & Leggett, 1949). Barnard describes his own experience with schoolhouses and the lack of planning in the introduction to his book:

> Go where he would, in the city or country, he encountered the district schoolhouse, standing in disgraceful contrast with every other structure designed for public or domestic use. Its location, construction, furniture and arrangements seem intended to hinder, and not promote, to defeat and not perfect, the work which was to be carried on within and without its walls (Barnard, 1849, p. 6).

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Although such information and standards existed, they were largely ignored. Wheelwright states in 1901 that undifferentiated classrooms continued to be designed and built in New York City schools (Wheelwright, 1901).

Twentieth Century

The first half of the 20th century encompassed World War I, the Great Depression and World War II. Two major factors changed public education in the United States during this time. The first was the passage of the Smith-Hughes Act of 1918 (Good, 1956; Hansen, 1956). After World War I a major emphasis was placed on vocational education. Matching funds from the federal government allowed high schools to provide vocational education and related programs at the college level. The vocational programs were especially associated with land grant colleges.

The second occurred in 1916, when John Dewey published his classic Democracy and Education (Dewey, 1916) , which began the gradual philosophical change in understanding how children learn and how they should be taught. This change in thought became known as the "Progressive Movement." The unique element of this new philosophy was that children should participate in learning through activities that are age-appropriate, rather than sitting in classrooms and listening passively. The interests and experiences of the child became forms of instruction, and the curriculum of the school was adapted to the needs of the child. In evaluating the educational system of the early 1900s, Dewey asked these questions about passive learning, and in particular, the rote learning he observed in schools:

> How many students were rendered callous to ideas, and how many lost the

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> impetus to learn because of the way in which learning was experienced by them? How many acquired special skills by means of automatic drills so that their power of judgement and capacity to act intelligently in new situations was limited? How many came to associate the learning process with the ennui and boredom? How many found what they did so foreign to the situations of life outside the school as to give them no power of control over the latter? How many came to associate books with dull drudgery so that they were "conditioned" to all but flashy reading matter? (Dewey, 1938, p. 15)

The Progressive Movement was strongest in the 1920s and 1930s. The movement eventually fell into disrepute because some of his disciples took the basic philosophy to extremes. In these situations, children were allowed to run the class without direction from the teacher, and control of student behavior was poor. More traditional instructional methods were reintroduced, along with the basic principles of developmental learning. Many of the elements, such as the importance of the individual, involving students in their assignments, and providing guiding lines for developmental experiences, lasted beyond the initial acceptance of the philosophy and are still in use today (Good, 1956).

The Great Depression began in 1929 and lasted until the beginning of World War II in 1941. Educational programs were reduced to basic programs during this period (Hansen, 1956). The Depression and war effort robbed most schools of any programs beyond the basic core curriculum. Some school construction did occur as a result of public works projects sponsored by the Federal Work Program Assistance (WPA) at that time (Hansen, 1956). Many of these schools are still in use around the country.

The Guidance and Counseling Movement became a visible part of the school instructional program during the late 1940s and 50s, and has remained an important part of our educational program (Butts & Cremin, 1953).

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Many changes have occurred in the our educational system in the last half of this century. The most dramatic has been the explosion of enrollments in the public schools. In the years following World War II, there was an immediate increase in the number of children attending school. This was followed by the largest increase in school construction ever witnessed in this country (American Association of School Administrators, 1992; Commission on California State Government Organization and Economy, 1992). Factors such as the birth rate, factory manufacturing, and assembly line production affected the demographic distribution of families and of schools. As communities grew, more schools were built. Overcrowded classrooms led to double-session schools. Eventually, the number of schools and classrooms caught up with enrollments, and still later, elementary student populations began to decline as communities matured (Commission on California State Government Organization and Economy, 1992). The post-war baby boom passed into the 1960s. School closures and vacant classrooms were the dominant themes of education in the 1970s. Economic inflation and accompanying dwindling financial resources caused significant reductions, and in some cases elimination, of ongoing school facility maintenance. Public schools were in poor physical condition. Older and poorly-maintained schools housed students even as a new force was beginning to impact the way business was being conducted, and eventually how education would be delivered (Education Writers Association, 1989; United States General Accounting Office, 1995). Technology became the new force that would have a major impact on education in the 1980s and into the 90s (Stueburg, Giddings, Knox, & Cousineau, 1992; United States General Accounting Office, 1995).

In the 1990s a second wave of new student began impacting the public schools. Schools that had educated the World War II baby boomer generation began to fill a second time with their children:

> History illustrates that when overcrowding and space crunches hit schools and communities in the 1950's and 1960's, state and district officials generally relied on somewhat hasty, inflexible approaches to dealing with the crisis. As a result of cutting corners, many districts, are today left with school sites that are unsuitable for their needs, do not lend themselves to alternative uses, and are old, poorly constructed, and in disrepair (National Education Knowledge Industry Association, 1997, p. 59).

Overcrowded classrooms returned, and school districts added temporary portable classrooms to house students (National Education Knowledge Industry Association, 1997). Many schools changed their instructional calendars to include multi-track, year-round calendars, alternative schedules, and use of non-school sites for charter schools (National Education Knowledge Industry Association, 1997).

In the early 1900s a combination of one-room schoolhouses and multi-classroom schools were in use across the United States. Grammar schools with grades one through eight became the dominant school type after World War I (Castaldi, 1994). The schools had low ceilings, poor ventilation, unsatisfactory lighting and uneven heating. The sanitary arrangements were often very poorly designed (Brubaker, 1947). The size of a representative primary grade classroom was 24 by 32 feet, while the corresponding grammar school classroom was 28 by 32 feet, each designed to accommodate 56 pupils (Wheelwright, 1901). The classroom cubicles were generally arranged within a square brick building, and the entire facility was designed without consideration of the educational programs that would occur within the building (Roth, 1957). The description

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of a typical school and classroom is consistent with the design of the first fully graded school in America, the Quincy Grammar School (1847) in Boston. This design became know as the "Quincy Box." It generally had four stories, a basement and an attic (Lowe, 1991). In a treatise on school architecture, Edmund Wheelwright in 1901 describes the value of a school building as depending upon the knowledge and skill used by the architect in the disposition of its parts. An early study conducted by the National Education Association found that schools built in this manner were designed in such a fashion as to render any program of modern education totally ineffective (Lowe, 1991).

Several other influences also worked to shape the design of schools in America in the 20th century. Major cities became centers for manufacturing plants employing vast numbers of relatively unskilled and uneducated workers. Factory work required employees to have few academic skills above the basics in reading and computation. It was a time when only six percent of the population graduated from high school (Fiske, 1995). The assembly line became the model for mass production, as well as the model for America's educational process. Teachers were seen as interchangeable parts, while students were seen as products moving along the assembly line (Fiske, 1995).

Another influence was the consolidation of one-room schools into multi-classroom grammar schools. Located mostly in urban areas, these schools emerged immediately after World War I as centers for first-through-eighth-grade education. They were designed in a variety of shapes and sizes, but the classrooms remained simple and functional (Castaldi, 1994).

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The combination of multi-graded classes in one facility and assembly line instructional programs created a common school design that was driven by desire to house large numbers of students in one facility, and within uniform instructional spaces (Fiske, 1995). Schools were the equivalent of educational factories. ? Little effort or consideration was given to the possible effects that the learning environment would have on the learner (Castaldi, 1994).

Little design or construction of schools occurred during the Great Depression. Only after the end of the World War II did the construction of school facilities begin again in earnest (Meek, 1995).

A summary of the design changes in public schools since the end of World War II illustrates the modifications that were made as a result of innovation and experimentation. Immediately following World War II, architects became quite excited about "bringing the outside into the building." Accordingly, large expanses of windows were built into school buildings. Beautiful vistas and great quantities of natural light were the order of the day. This development created problems controlling heat build-up within the building during certain parts of the year and glare from direct and reflected sunlight. The 1960s ushered in the era of the "finger design." Energy loss and gain were very high due to large expanses of outside walls, but with a plentiful supply of inexpensive energy at the time, this design posed no significant problems. During the 1970s, air conditioning in school buildings was widely accepted. But due to the cost of energy required for air conditioning, architects became deeply concerned with the heat gain of a school building during hot days when the air conditioning was required. In order to solve this problem,

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architects introduced the controversial "windowless" school. And finally, the enormous increase in the cost of energy following the Iranian revolution in the 1970s forced a multitude of changes in the design of educational facilities for the purpose of conserving energy and facilitating energy management (Castaldi, 1987).

The latest design standard affecting new and existing schools is the implementation of instructional technology. Planning for the use of computers, video equipment and other forms of technology has added to the list of facility modifications in planning for school facilities (Babineau, 1990; Sogge, 1993).

Between 1919 and the Present

Although many schools were copies of existing buildings, some facilities were being planned in response to the educational needs of the students and the curriculum. One notable effort was the design and construction of Crow Island School. In 1919, the Winnetka, Illinois, school board hired Charleton Washburne, a young teacher from San Francisco, to be its superintendent. He was charged with the responsibility to reform the educational programs of the district. In the 24 years he served as the superintendent, he implemented a process of continuous curricular improvement which included mastery of basic skills, attention to social development, creative activities and experimental learning (Pick, 1991). This process and other similar processes continue to serve as models for educational reform.

In 1937 Washburne began the process of designing a new elementary school facility that would express his vision of continuous curriculum improvement. He hired a young architect, Larry Perkins, and began a collaborative process that resulted in

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nationally recognized Crow Island School (Landecker, 1991). Crow Island School continues to stand as an archetype for modern school design. The significant impacts that resulted from the Crow Island School design process have influenced how educators, planners and architects view school design. The two major factors in the Crow Island design process were the recognition that a school facility should be in harmony with the instructional curriculum (Meek, 1995) and that a school should be a place that is designed for the experiences of childhood (Pesler, 1941).

A second example of enduring educational effectiveness in a school facility is Columbia High School in Maplewood, New Jersey. Built in 1927, Columbia High School was designed through the use of an extensive planning process that included staff and community members. It was selected by the Encyclopedia Britannica as the typical high school of 1930 and was featured in the first edition of American School and University. In 1978, American School and University sent a reporter to see how well the school had withstood the test of time (American School and University, 1978). The current principal of Columbia High School states:

> The architects, educators and citizens who planned, financed and constructed Columbia High School gave us a building that will serve us well for many, many years to come. It is solid, it is comfortable, it is clean and warm and it maintains an educational outlook that is both modern and classic. I don't think we can ask for much more from our buildings. (American School and University, 1978, p. 42)

The reporter wrote further that Columbia High School succeeded on all levels to serve the educational needs of its students and staff (American School and University, 1978).

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The planning and design processes used by Perkins and Washburne and the community of Maplewood, New Jersey, are examples of architectural programming that continue to be used in successful modern school facility design. Leading authorities in the field of educational facilities design agree that a similar comprehensive planning process is essential if a campus and its buildings are to enhance the instructional program of a school. Efforts to modernize and reconstruct existing school facilities also require the same commitment to a comprehensive planning process (Banghart & Trull, 1973; Castaldi, 1994; Herrick, McLeary, Clapp & Bogner, 1956; MacConnell, 1957; National Council on Schoolhouse Construction, 1964; Ovard, 1962).

School Facility Planning Process

The need for a comprehensive planning process is often overlooked by school districts as they plan for their new and modernized school facilities. In some unfortunate situations, superintendents and school boards have charged forward with facility projects not knowing exactly how all the pieces of the task would fit together. Decisions are made on a day-by-day basis, frequently the products of instincts alone. This is a high-risk method of facility planning (Kowalski, 1989). The three most frequent reasons for the lack of comprehensive planning are lack of time, lack of district resources to complete the planning process and a belief that the district officials already know the desires of their teachers, staff, students and community (Kowalski, 1989).

> Planning wisely does not cost any more than failing to do so. In other cases, spending more initially on some design components will pay off over the years. In the long run, proper planning will save money, time, and resources because the facility will perform at its maximum efficiency and capability for many years. Nor do funding shortages eliminate the need for good planning. In fact, the importance

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> of proper planning increases when state and local funds are scare because these limited dollars must be put to good use. (Honig, 1990, p. vi)

Without a comprehensive planning process, school facilities could be "great hollow sculptures" (Sommer, 1969, p. 4) whose form has little relationship to educational function.

Schools are constructed for the purpose of teaching the children of the community. Planning, as related to school construction, is done to make the school plant more functional in terms of the teaching-learning process. Nonfunctional facilities are likely to result if the quality of planning is poor. Poor planning wastes money (Ovard, 1962).

There are two basic models most often used in a school facilities planning process, the integrated and the nonintegrated models. The nonintegrated model is distinguished by the isolation of the various planning tasks with no attempt to amalgamate the information with the needs of the community and the total school district. This is an efficient method, but very narrowly focused. Integrated planning is more difficult and complicated, but produces more precise and higher quality information about the facility. The integrated model seeks to identify the relationships of the school facility to the curriculum, students, staff and community in the planning process (Kowalski, 1989). The integrated process is also known as the cultural approach to planning (Bourgeois & Brodwin, 1990), or strategic planning (Holloway, 1986; Quinn, 1990).

Various examples of the integrated model of school facility planning are available. They range from textbooks to guides published by various agencies, such as

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Planning Secondary School Buildings (Engelhardt, Engelhardt & Leggett, 1949), Planning Educational Facilities (Leu, 1965), Planning for School Buildings (MacConnell, 1957), NCSC Guide for Planning School Facilities (National Council on Schoolhouse Construction, 1964), Educational Facilities (Castaldi, 1994), Planning and Managing School Facilities (Kowalski, 1983), Facilities Planning and Construction (California Department of Education, 1991), Educational Planning (Banghart & Trull, 1973), Planning Functional School Buildings (Sumption & Landes, 1957) and Guide for Planning Educational Facilities (Council of Educational Facilities Planners, 1991). The elements commonly found in the above planning processes are long-range planning, instructional program planning, community use planning, building-specific planning, modernization and reconstruction planning and post-occupancy evaluations.

Long-Range Planning

Long-range planning is among the most important aspects of the school facilities planning process. The length of time required to plan, finance, design and construct a school exceeds the average tenure of many school superintendents, and can exceed the terms of the majority of the school board members who initiated the facility (Shapell, 1992). The useful life of the facility will reach into the second and third generations of a school district's parents and students (American School and University, 1978). The long-range planning process and the documents that result can provide the current and historic continuity between the school facility, the community, board of trustees, the school district and the instructional program.

The long-range planning process contains information about current and projected student enrollments, the type and condition of school facilities, the enrollment capacity of existing facilities, the needed new facilities, the required modernization or replacement of existing facilities and the means to finance the needed facilities program.

The first step in the planning process is recognizing and determining that long-range planning should occur before consideration is given to other phases of the design process. The California Department of Education identifies long-range planning as the first goal in a school district's facility planning process (California Department of Education, 1991), and no substantial expenditure of district funds should be made without such planning (Castaldi, 1994).

How students in a school district are distributed and the projections of their population densities are basic to the long-range planning of a school district. The student demographic information is analyzed and a forecast of the projected school facility need is developed. Several methods may be used to conduct an analysis of demographic information. One of the methods most frequently used was developed at Ohio State University by Professors John Herric and Marion Conrad. Their methodology consisted of projecting the number of students who would pass from one grade to the next. This methodology of student population projection became known as the "cohort survival rate" (Castaldi, 1987, p. 73). A similar method was described by Dr. Thomas C. Holy (1947). Leu reports that in using this type of forecasting one must be aware of its weakness, a tendency to oversimplify the picture. The cohort survival method fails to recognize the numerous factors that can independently affect school enrollments, and melds them into a single element. When one or more of these factors undergoes a significant change, the cohort survival rate methodology becomes inaccurate (Leu, 1965). However, with adjustments for known changes in the community, it can be very accurate. To address the variables that may affect the demographic projections of a school district, a multiple factor method may be used (MacConnell, 1957). The multiple factor method recognizes the dynamic nature of a community, and relies on information from several sources to develop the demographic information for a school district. These sources may include U.S. census trends, public school enrollments, utility connections, increases or reductions in the number of names in the city phone book, death and birth certificates issued and building permits let.

No two school districts will have the same combination of factors affecting their student populations. A careful study of the factors affecting a community and its school district will improve the accuracy of the student demographic projections. Comparisons with other school districts can be helpful, but each school district must use its best judgement in making its student projections (Sumption & Landes, 1957).

The demographic trends predicted through the use of long-range planning will initiate an analysis of a school district's ability to house and educate their students. In making a determination about future school facility needs, the school district must periodically review its existing facilities to determining their adequacy to house students and support the instructional program.

The review and evaluation of existing school district facilities should take into consideration several factors. The first factor is whether the school facility is structurally sound, and if the facility can be modernized to meet the instructional programs that must be housed in the facility. That determination may be made through the use of a district-developed survey or by using one of several prepared surveys. Examples of surveys used evaluate school facilities include Standards for the Evaluation of School Buildings oly & Arnold, 1936), Guide for Evaluating School Building (McLeary, 1949), andards for the Evaluation of Elementary School Building (Odell, 1950) and Standards r the Evaluation of Secondary School Buildings (Odell, 1950). The Citizens' Workbook r Evaluating School Buildings (Landes & Sumption, 1957) is an example of the second type of evaluation, which identifies functional characteristics of a school building.

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The surveys assign numeric values to the specific items, and the values are related to a predetermined standard. Subjective and objective ratings are used to evaluate the facilities. Subjective evaluations are generally used when measuring how well a facility meets a particular instructional program need. Objective evaluations are used to measure how well the facility meets construction specifications (Sumption & Landes, 1957). Once the data are collected and analyzed to determine the existing suitable space, the projected student increases can be used to determine if there is a need for additional classrooms and schools.

The cost of renovating existing facilities to meet the requirements of current and future instructional programs is a significant consideration. The cost-benefit relationship between renovating existing facilities and constructing new facilities must be evaluated in the long-range plan. The recommendation to modernize a school versus the construction of a new facility to replace an existing school is one of the most perplexing questions that will confront the school district (Castaldi, 1994).

As a matter of economy, careful evaluation of the existing school structure is necessary prior to the construction of the new school plant. If the existing buildings can fulfill the needs of the new program, or may be adapted to these needs, the cost of new construction can be saved. However, hidden costs often result in excessive expenditures when any major rehabilitation is undertaken (MacConnell, 1957).

Once the number and types of facilities have been identified, the next step is to determine the student enrollment capacity of the facilities (Leu, 1965; Sumption & Landes, 1957). Each school and school type will have different capacities and unitization rates. In an example, Leu describes an elementary school with twenty classrooms. Each is loaded with 35 students. This loading factor creates a capacity of 700 students. By reducing the class size by 10 students in each classroom to 25 students, the effective capacity of the school is reduced to 500 students, but the unitization rate is still almost 100 percent. Such reductions in capacity are just as dramatic in secondary schools in which new instructional programs are reducing class sizes (Leu, 1965).

The final element in the long-range planning process is the identification of methods to finance the cost of remodeling existing schools, and the construction of new schools and classrooms. This may be one of the most difficult of all the tasks identified in the long-range planning process.

Few communities have sufficient resources to do all the building they would like to do or should do to house their children properly, and at the same time provide other desired community services. Values must be considered and immediate needs weighed. Education cannot be considered independent of the needs of youth: their health, recreation and welfare. The issue is not one of merely passing a bond issue; it is one commitment from the entire community (MacConnell, 1957).

The financing plan for school facilities is usually in the form of a capital facilities budget. Preparing a capital facilities budget will help eliminate waste by (a) providing an organized plan for balancing the capital needs against the resources, (b) avoiding short-sighted decisions, (c) developing a schedule for debt retirement, (d) avoiding mistakes caused by either overbuilding or duplication of facilities, and (e) having a plan that will guide decisions during those moments when unexpected changes suddenly occur (National Council on Schoolhouse Construction, 1964; Sumption & Landes, 1957).

The three major programs found in capital facilities budgets include (a) a definition of educational facilities needed, (b) a schedule of expenditures, and (c) the plan to obtain the financing required to complete the long-range plan (Reider, 1991). The definition of "educational facilities need" relies on the information gleaned from the planning process. In the budgeting process priorities are given to three types of facility needs. The request for new facilities is the first priority of a financial plan. The need for new facilities must be supported by data, including enrollment pressures on existing facilities, capacities of district schools and the projected cost of the new facilities.

Requests for alterations and renovations of existing schools should be the second priority. Requests for alterations and renovations should also be listed in the budget by the year that each is expected to be funded. The key factor in the justification for funding renovations to a school is the relationship between the existing facility and the current instructional program.

Long-term maintenance and upgrading of facilities to meet new requirements and codes is the third priority for budget analysis. An exception to the priorities occurs if a school district's enrollment is declining. In such situations, the cost of closing a school must be considered a competing priority (Reider, 1991).

The expenditures in a capital budget should parallel the projected instructional program needs. The capital budget estimates the cost for new facilities, additions or alterations to existing facilities, furniture and equipment and maintenance. The estimates should also be adjusted for inflation, and the capital budget should extend at least five years beyond the current budget projections (Reider, 1991).

Financing the cost of the capital facilities plan is a significant challenge. The challenge is based on the fact that the capital facilities budget is often greater than the school district operational budget. While the general fund of most school districts relies on monies from local, state and federal taxes, school facilities funding usually requires the district to enter into a long-term local debt. School boards may have several options to fund the capital facilities budget. The options should be fully analyzed and the recommendations for financing the capital facilities budget should be presented to the school board as a part of the long-range facilities plan. The presentation should also describe any anticipated effect local funding efforts will have on local tax rates (Reider, 1991).

In many cases this recommendation will be in the form of some type of school bond. In the case of a local school bond, an election is generally required. The ability to pass a local school bond is directly related to the ability of the school district to justify its facility needs. As mentioned earlier in this paper, documentation of the educational facilities needs and their cost is invaluable in efforts to pass a local school bond (Reider, 1991).

Educational Program Planning

The educational program should strongly influence the design of any school building (Lee, 1993). No educational facility that imposes unwanted restrictions upon the educational program is planned well (Castaldi, 1994). In order to plan for the required number of new schools and classrooms, the instructional program of the school district must direct the decisions of the planning process (Ovard, 1962). The same consideration must be given when planning the modernization of existing facilities (Day, 1982). The instructional decision includes what will be taught, how it will be taught and how many students will be taught (MacConnell, 1957). In MacKenzie's book on effective school facilities planning, an emphasis was placed on the need for an early comprehensive planning process structured around the education program of the school (MacKenzie, 1989). The California Department of Education recommends consideration be given to needs of the current and future users of the facility (Honig, 1990) in addition to the educational program.

A school facility represents the culmination of programming, planning and hard work. The building will serve the students, staff and community for many decades. A school building is the most influential element in the school's educational program (Burch, 1993; Lane, 1991; Ovard, 1962). It is for these reasons that educational program planning be considered among the highest priories in the facility planning process (MacKenzie, 1989).

Educators must work closely with the architects in the design process. No architect can design a functional school building for a given educational need without a lucid description of the educational program. It is not enough for an architect to know about the subjects that will be taught in the school. The architect must also know what the students and teachers will be doing in their classrooms, the space that they will need, and the equipment they will use (Castaldi, 1994).

"The best projects evolve from constructive dialogue between designer and educator. But it is essential that the educators always remain in charge of facilities development, and not delegate program decisions or interpretations to others" (Aasletten, 1993, p. 3). The chief architect for the California Department of Education states:

> The educational program must be defined in educational specifications to enable planners to develop appropriate facilities. Communication of curriculum requirements can be accomplished if planning committees are willing and able to document details of learning theory, on a subject-by-subject basis to show what facilities they need. (Aasletten, 1993, p. 4)

No universal formula dictates that educational specifications should be completed by any particular person or persons. Each individual project must assess existing needs and resources to determine who should be assigned the task of formulating program requirements (Kowalski, 1983). Although not a common practice, more educators are being included in the design of school facilities. The educators help to describe the

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instructional programs in the educational specifications process (Burch, 1993). When educators participate in the planning process, they are highly motivated and stimulated by the opportunity to influence a facility that will house them (Foldesy, 1985). The educational specifications should also include both the formal and informal curriculum present in every school and community (Foldesy, 1985). The success of facility planning depends on how accurately and thoroughly the specifications are articulated in the community's educational philosophy and the way curricular goals will be realized (Council of Educational Facilities Planners, 1991). The educational specifications process is independent of economic development or political systems of the school districts (Beynon, 1985). The process is a complex undertaking, but without a comprehensive educational specifications plan, it is difficult for an architect to design a school facility that meets the needs of the instructional program and those who will use the facility (Burch, 1993). In the absence of an educational specifications plan, the architect must rely on previous designs and speculative assumptions (Foldesy, 1985; Ovard, 1962).

The process of developing educational specifications requires that the participants begin with no preconceived notion of a building's form and style (Davis, 1981). Holding such preconceived ideas are among the worst mistakes that can be made in the design of the facility (Chlad, 1985). The process must consider the curricular requirements on a subject-by-subject basis (Aasletten, 1993), and describes the equipment and furnishings necessary for a specific number of pupils within an individual school (Boles, 1965).

The educational specifications document has the greatest value when it is prepared before any drawings or considerations are given to space and functional relationships

(Chlad, 1985). The educational specifications link the design of the future buildings to the educational program and serve as documentation for the completed facility (Aasletten, 1993).

> Critical to the district's facilities plan are its specifications, which trace the history of the school district's educational program and its community, goals, practices and systems. These specifications, which guide the architect in matching the design for the school to the needs of its users, are based on the educational programs, people and activities to be accommodated. One of the main benefits of developing such specifications is the process itself, which allows staff and others to look at what is being done and what should be done in the future. (California Department of Education, 1990, p. 30)

The contents of an educational specifications document will vary with the school district and the facility. The specifications will also vary according to the goals, objectives, policies and community needs (Aasletten, 1993). Educational specifications should include several sections. One important section is a definition of the enrollment and the grade levels that will be assigned to the school. A description of the curriculum and the teaching methodologies are important elements of the educational specifications. The spaces in the facility should be described. The space description should include the type, number, size and special characteristics needed to house and educate students. Included in the description of instructional spaces should be the spatial relationships of classrooms, support services, administration, food services, play fields and hard courts, parking and any other program space necessary for the facility. Extra-curricular and community uses should be a part of the educational specifications. The relationships between enrollment, grade level configuration, instructional program and community needs must be used to describe the facility site and size (California Department of Education, 1990; Kowalski, 1989).

Many school districts retain the services of an educational consultant to assist them with the formulation of functional educational specifications. The most common practice by far involves a professor specializing in school facilities being employed as a consultant to assist in or direct the process. Retaining an educational consultant is advantageous because it provides expertise for a highly specialized task, and the consultant can be expected to bring to the process an objective perspective that may not be present with local school district employees. The educational consultant's primary tasks are to gather the relevant information, provide professional opinions regarding requests, and prepare a report with specific conclusions and recommendations for people within the school district to consider (Kowalski, 1983).

An example of the value that is added to a school facility when an educational specifications process is used is the Columbia High School in Maplewood, New Jersey. Constructed in 1927 after an extensive planning process, Columbia High School was selected by the Encyclopedia Britannica in 1930 as the typical high school of the day. It was also featured in the debut issue of American School and University. Fifty years later, American School and University revisited Columbia High School and found that the school continued to serve the students and staff with only minor modifications to the original building. Much of the credit for the continuing success of the building was given to the early planning and specifications developed by the community (American School and University, 1978).

Community Use Planning

The schools of America are seen as community institutions. Each school meets a unique instructional need. This assumption demands that every school be designed to meet specific local educational needs (MacKenzie, 1989). In the United States the responsibility for educating our children has been delegated to the each of the fifty states. In discharging this responsibility, the states have granted local communities authority to form and operate local school districts. Local control allows each community to adapt its educational programs to the needs of its community while meeting required state standards. Such local control also allows the community to invest in its schools. This philosophy promotes the use of schools to address community needs and improve community life (Kowalski, 1989). Under such a system, the local school districts are encouraged to plan for their future educational needs. Among the most important responsibilities facing each community is the task of planning, designing, constructing and financing school facilities.

The value of community participation in the planning of school facilities has been demonstrated in many instances. Ann Taylor, professor of Architecture and Planning at the University of New Mexico, describes the impact that community members played in the planning and design of several schools. Professor Taylor describes a Head Start classroom in New Mexico, the Pine Hill School on a Navajo reservation, a playground at Riverside School in Spokane, Washington, the new Trout Lake School in Trout Lake, Washington, and Lincoln High School in Stockton, California, as examples of community involvement that have resulted in significant, unique and successful school facilities

(Taylor, 1995). Using schools for more than the "traditional" school program expands the scope of planning (Kowalski, 1989). Planning and designing for school facilities begins and ends with the community. Many steps may be involved in the process, but without the initial approval of the community, it is difficult to complete the task of constructing a school (MacKenzie, 1989).

Some additional benefits of bringing community members into the process are the unique resources they bring to the school district. Community members can provide a rich array of talents and abilities that will enhance the school facility planning process. These may include knowledge and experience in fields that relate to planning school facilities. Experience in business, industry, skilled trades and local planning will support the school facility planning process. Examples of such partnerships between schools and businesses include IBM and Poughkeesie School District in New York, and among AT&T, Indiana high schools and the University of Indiana (Smith, 1988).

Local designs for public schools can follow local building traditions (Smith, 1988). Community members can often supply historical information about the community and its priorities. Community members serving in the school facilities planning process can provide information about the social, recreational, financial and business resources available or needed in their school district. As a part of the community education program, spaces for community gatherings and presentations must be considered (Castaldi, 1994). Spaces for community services should be planned as part of the school campus, and community outdoor education spaces should be designed as a part of the landscape (Day, 1994). Building appropriate school facilities is an important community responsibility (MacConnell, 1957).

Community members are important in measuring the nature of public opinion about the school facility needs of their school district:

> The winds of change buffeting school curricula have not spared architectural form. While the prevailing back to basics movement in pedagogy is encouraging a revival of traditional layouts ("bells and cells," architect Earl Flansburgh terms them), communities are pressuring school districts to include more facilities for shared use. And the clamor for specialized areas–especially for computers–persists, even when necessary funding is unavailable. (Smith, 1988, p. 100)

When a school board decides either to build a new school or to renovate an old one, an attempt should be made to develop a facility that will house in one location the school district's instructional program and several of the community's different educational programs. The community educational programs attempt to bring into the traditional schooling process local citizens and social agencies for joint cooperative and coordinated efforts to provide better educational opportunities for everyone in the neighborhood or community (MacKenzie, 1989). Community members can provide direction in the setting of priorities for programs and facilities when faced with reductions. Community members involved in planning a school facility provide a direct link between the process and those that they represent. The community members can speak with authority about the planning and the process used to provide the school facility. They have ownership of the plan and are a powerful force when public support is necessary. An example is the case study of Westlake High School, which documents the success of community involvement in the planning process. "The Westlake High School

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experience demonstrates that the use of community people to help plan a school facility is not only possible, but that the process itself can build an important and lasting bond between school and community" (Ovard & Kirschenstein, 1979, p. 32).

Facility Planning

School facilities are a reflection of the educational philosophy and the stated needs of the community. The school environment affects attitudes and behaviors. The character, appearance and physical arrangement of the learning environment convey distinct messages to the users about the activities and responses that are expected and appropriate (Council of Educational Facilities Planners, 1991). The concept of education has been broadened from mastery of facts to include activity and experience as a part of the instruction program. Elementary school classrooms are examples of the blending of fact and application. Developmental activity is the keynote of elementary school curricula (MacConnell, 1957). The school is more than a shelter from the weather; it can help implement and facilitate the instructional program. The focus of planning is the child and her/his activity; the planned building is a reflection of the manner in which children are taught and of the community's philosophy of education (MacConnell, 1957).

One of the most important factors in planning an adequate school facility is the nature of its student population. Knowing the grade levels, the number of students and projections of the population over the next several years permits consideration of the spaces required to house the students, and provides at least a partial basis for determining the total space requirements of the school (Council of Educational Facilities Planners, 1991; Leu, 1965). The basic classroom needs are supplemented by an evaluation of the spaces needed for supplemental activities, differentiated teaching methodologies, and furniture and equipment. The activities and support services of the facility are translated into meaningful information to be used in the design of the school by the architects and engineers.

> This translation is not made independently of the architect, nor is it regarded as the final set of educational specifications. It develops through an evolving process in which the various planning groups, architect, the teachers, the administrative staff, the board and the consultants work together. Moreover, it should be understood that planning groups do not develop architectural specifications, but develop guides to aid the architect in his/her design. Architects plan schools while educators plan for schools. (MacConnell, 1957, p. 174)

The value of a school facility will be evaluated by several standards. These standards are a reflection of the backgrounds and interests of the constituents making the evaluations. Parents are concerned about the safety of their children while housed in the school, taxpayers are concerned about the economy of construction and operations, community members are concerned about external appearance of the school building and educators want to emphasize the relationships between the facility and their instructional program. A common list of principles to guide the planning process and judge the completed building is helpful in evaluating a school facility design. A set of suggested principles are: (a) safety, (b) health, (c) educational adequacy, (d) economy, (e) flexibility, (f) expandabilty, and (g) aesthetics (Leu, 1965).

It is difficult to classify the various types of public schools. Before World War I there were basically two configurations for public schools, grammar schools (grades 1-8) and high school (grades 9-12). After World War I the junior high school emerged, serving grades seven through nine. As a result, there continue to be three basic types of schools.

A grammar school with grades 1-6, junior high school with grades 7-9 and senior high school with grades 10-12. These configurations are by no means universal, but represent basic configurations (Castaldi, 1994). There are school districts that continue the classic 8-4 configuration (an eight-grade grammar school and a four-grade high school), and others that have adopted a modified three-grade-level configuration with a middle school (grades 7-8-9 or 6-7-8) replacing the junior high school. "The case has yet to be made which grade organization is the best. It does not matter what one calls a school. What really counts is the quality of education the student receives there" (Castaldi, 1994, p. 266).

Considerations for space planning of a conventional elementary school generally include kindergarten classrooms, self-contained elementary classrooms, multipurpose room, administration office and various specialized spaces for library, special education, health, food services, storage and custodial services. In addition, the building must provide for the variation in physical, mental and social development of the children who will attend the facility (National Council on Schoolhouse Construction, 1964). It must be a versatile building, able to educate children who range in height from four to six feet, and weigh between 30 and 150 pounds (Castaldi, 1994).

Middle schools differ from junior high schools. In a middle school the school is child-oriented rather subject matter-oriented. While junior high schools tend to be heavily departmentalized and resemble scaled-down versions of senior high schools, middle schools are considered to be a bridge or transition between the self-contained classrooms of the elementary school, and the completely departmentalized senior high school. In the middle school curriculum, students in the lower grades levels (grades 5-6) spend more time with a single teacher (semi-self contained), and as they move to the higher grades, spend more time with different teachers who teach specific subjects (departmentalization) (California Department of Education, 1987; Lake, 1989). This configuration requires a school facility that has a mixture of self-contained classrooms and subject/program–specific classrooms in addition to the other required program spaces. The arrangement of the instructional spaces should be in such a manner that the circulation of students is generally related to their grade level assignment.

The additional program spaces for a middle school may include library/media center, science laboratories, consumer education, industrial technology, physical education, creative and performing arts, administrative offices, counseling services, student government, journalism, special education, health services, food services, custodial services and storage (Castaldi, 1994).

The configuration of a junior high school differs from a middle school in that instructional clusters are arranged according to subject matter and not grade level. Thus a more departmentalized structure is designed into the junior high school than the middle school. In such a configuration, most of the students will move among instructional departments during their passing periods (Lake, 1989).

The instructional programs for senior high school vary among school districts, but there are some educational practices that are similar in many of them. The senior high school represents the most departmentalized arrangement of public school instructional programs. This model of instructional organization has operated for at least half a century

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(Castaldi, 1994). Class size can vary significantly, depending on the subject, grade level and program. Teachers are assigned to classrooms and the students move among them during the school day. High schools may have enrollments that exceed 1000 students. Such large numbers of students affect facility planning in anticipation of large group activities. The instructional program issues for a senior high school complicate the facility planning process and must be considered as buildings are planned. The impact of specialty courses and differential instructional offerings requires a detailed analysis of the room space needs of the facility (National Council on Schoolhouse Construction, 1964). The unique instructional program requirements of each department must be considered part of the facility planning process. The relationships of the instructional facility clusters to one another and the other campus services are an important factor in the planning phase. The access that is allowed or restricted by the students, staff, parents and community is a significant issue in the campus design and can not be overlooked in the process (Castaldi, 1994).

In summary, the unique needs of the instructional programs generate school facilities of different designs. The elementary school design is generally a facility that requires classrooms for self-contained instruction and some specialty spaces. The middle school design requires grade-level grouping and the sharing of educational spaces. A junior high school design requires a facility that can house the instructional program in a departmental configuration. The comprehensive high school is designed as a fully departmentalized facility that can serve the instructional needs of both college-bound and vocational students.

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Modernization

School modernization is a more complex and time-consuming task than planning a new facility. It is much easier to change lines on a sheet of paper than it is to move partitions, reroute electrical wire, cut and rejoin pipes and redesign the structural members of an existing building (Castaldi, 1994). Modernization is also a paradoxical and controversial topic. Many community members support modernization over replacement of a school facility for two reasons. They may feel loyalty to the "old school" that served the community in the past. There also seems to be a belief that modernization means less cost because part of the old structure is preserved. Many community members fail to realize that like other resources, school buildings can become functionally obsolete. Industry would not continue plants which were unsuitable to their purposes; neither should education (Sumption & Landes, 1957). The Unites States General Accounting Office reported that $112 billion is needed to repair or upgrade public schools around the country. One-third of those schools needs extensive repairs or replacement of at least one building. These schools house about 14 million students (Services, 1995).

Even though the modernization needs across the United States are enormous, the decision to modernize a school facility is a local decision and requires an objective, comprehensive study. The recommendation of that study will require that the board of trustees act in the best interests of the public and the school district (Castaldi, 1994). In considering whether modernizing a school facility is feasible, five key questions should be considered: (a) What are the educational goals of the school district? (b) How does this facility/site fit into the overall short- and long-term plans of the district's educational system? (c) Can the educational facility be renovated? (d) What is the historical significance of the facility? (e) What is the financial support of the project? (Council of Educational Facilities Planners, 1991).

An important consideration that can not be underestimated is whether the modernized facility will be able to deliver an instructional program equivalent to that offered in a new facility. The implied assumption is that the modernized facility is equivalent to the new building that would replace it. Very rarely can such expectations be fully realized, and those involved with the project must accept the principle that modernization of the existing facilities will be a compromise between the restrictions of the original facility and the requirements of the new instructional program (Castaldi, 1994; Sumption & Landes, 1957).

After the decision is made to modernize the school facility, the process used to prepare the construction documents is similar to that used in designing a new facility. These include the development of educational specifications, which are exactly the same as those prepared for a new building. In the later stages of planning, the same compromises to the educational specifications will need to be made in order to make the most effective use of the existing spaces in relation to the instructional program. The revised educational specifications are then given to the architect, who will attempt to satisfy the basic educational requirements outlined in the specifications. The procedures from this point on are similar to any other school construction project (Castaldi, 1994).

Orientation and Post-Occupancy Evaluation

The final stage in any school construction project consists of two phases. They are the orientation of the users and community to the new facility, and the evaluation of the facility to determine if the design and construction meet the expectations of the school district and its community. Orientation and evaluation of the facility complete the facility planning cycle and provide corrective feedback for the next planning process (Council of Educational Facilities Planners, 1991).

When the orientation is neglected, the staff and faculty must face the challenge of adjusting to a new facility without a method to smooth the transition period between opening and full facility utilization. In the process of opening the facility, the potential of many design features may never become realized because the users do not understand the purposes and functions that have been designed into the facility. New facilities and new environments will not compel changes in instructional behaviors unless there is an effort to provide an understanding of the relationship between the instructional program and the facility. The orientation process should also include the community that will be served by the facility. The community that supported the funding and construction of the school facility should be given an orientation that will promote a familiarity with educational programs available in the school and the opportunities that will be available for community use (Council of Educational Facilities Planners, 1991).

Three basic means to accomplish an orientation are a "user's manual," an orientation session, and a detailed in-service program. The user's manual usually includes a summary of the project's history and design concepts, an explanation of how the design concepts and the instructional program are implemented in the construction of the facility,

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and information about the operations and maintenance of the systems, components and equipment in the facility (Castaldi, 1994). The orientation sessions are designed to answer questions about the facility and may take the form of a facility tour conducted by the architect, consultants and district staff. As in the user's manual, the information explains the project, its history and the intended use of each portion of the facility (Council of Educational Facilities Planners, 1991). In-service programs are designed to provide concentrated information on relationships between systems, facilities and the user needs. Teacher in-services may involve the relationships between the facility and the instructional programs, while the maintenance staff may be trained in the programming and operations of the heating and air conditioning systems (Council of Educational Facilities Planners, 1991).

The familiarity of the community with its school facilities will provide an awareness of how tax dollars are spent in the construction and maintenance of schools. This awareness will also provide an opportunity for the public to understand the types of educational environment that teachers and students share during each school day. Campaigns that include such elements as media articles, brochures, open house tours and parent newsletters can be effective methods to inform and educate the community about school facilities (Council of Educational Facilities Planners, 1991).

Once the school building is complete and occupied by the users, once the community has been oriented and the instructional program has been implemented, it is time for the final step in the design process of the school facility, the post-occupancy evaluation. Although the post-occupancy evaluation may be the last step in the design process, it is also the genesis of the next school facility, a process that continues for several years beyond the completion of the facility just completed (Council of Educational Facilities Planners, 1991).

A post-occupancy evaluation can help to measure the effectiveness of the facility in providing for the diversified instructional activities that take place within it. The information that is available from this process includes a determination of the effectiveness of the planning process and the adequacy of the educational specifications process. It can identify the features in buildings that should be retained or eliminated in the next design, and identify the corrective measures that should be considered in planning the next school facility. The evaluation process relies on the comments and responses of the facility's users. These may include teachers, administrators, students, instructional aides, custodians, clerical staff, food services personnel and parents. Responses may be obtained from state and federal officials if special programs are operated in the school facility (Council of Educational Facilities Planners, 1991).

The post-occupancy evaluation can be done through the use of a questionnaire or survey. It must be simple to administer and tabulate, and should identify the qualifications of the individuals responding to the survey. The post-occupancy evaluation may be repeated several years after the completion of a facility to validate the current instructional and construction needs against those in place at the time of the original design (Council of Educational Facilities Planners, 1991).

As stated earlier, the useful life of a school facility will span several generations of students. Extended use of the school facility and the need to accommodate changes in

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the instructional curriculum requires time, effort and energy be spent in the careful and thoughtful planning and designing of our public schools.

CHAPTER 3

CASE STUDY OF THE HERITAGE OAK ELEMENTARY SCHOOL

Introduction

The following case study will describe the process used to plan, to design and to construct the Heritage Oak Elementary School. It was the first school to be constructed in the Dry Creek Joint Elementary School District in more than 100 years and was the recipient of the James D. MacConnell Award presented by the Council of Educational Facility Planners International (CEFPI) in 1994.

At the time of formation, the Dry Creek School District was an elementary school district with only one school (grades K-8), located in the Central Valley of California near Sacramento, the state capital. During the late 1980s and the early 1990s the Dry Creek School District was among the fastest growing school districts in California. Since 1990 the Dry Creek School District has opened one new school every eighteen months on average. By 1997 the district had constructed three elementary schools (grades K-5) and one middle school (grades 6-8). Another elementary school opening in the spring of 1999 and a second middle school are scheduled to be opened in the summer of 1999. The district master plan includes at least two more elementary schools by the year 2010.

The purpose of this case study is to describe in detail the programming processes that influenced the Dry Creek School District as it prepared and built Heritage Oak Elementary School. The information contained in this case study has served as a

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prototype within the district and may serve as a model or provide helpful information for other school districts that are considering the construction of school facilities.

Historic Description of the Dry Creek School District

The Dry Creek School District began as a single school in 1872. The exact date is not known because many original records were lost when the Grange Hall that stored historic records for the area was destroyed by fire. A deed for the original school was recorded in Placer County on August 31, 1876. The deed conveyed the original first acre of land from Andrew R. Finley to the Antelope and Dry Creek School Districts for the price of one dollar. A continuing restriction of the original deed was that the school would revert to the original owner or his heirs in the event that the property was no longer used for a school facility (County of Placer, 1876).

Through later transfers of land, the original site was expanded to its present size of slightly more than ten acres. These included property transfers from Thomas Dudley on February 6, 1884, J.D. Pratt in 1888, Melland and Elaine Lewis in 1947 and Willard and Elaine Lewis on April 27, 1953 (Sage Institute, 1985).

The original Dry Creek School District boundaries were formed on April 7, 1887 (Sage Institute, 1985). Originally designed to follow closely the section lines that described the largely uninhabited portions of south Placer and north Sacramento Counties, the Dry Creek School District served a rural, agriculturally based community. The first major change in the district boundary was the formation of the Eureka Union School District in 1896, that became the eastern boundary of the Dry Creek School

District (Sage Institute, 1985). Roseville was incorporated as a city in 1911, and as part of its incorporation formed an elementary school district (Sage Institute, 1985). The area designated to be served by the Roseville City School District essentially defined the present Dry Creek School District boundaries in Placer County.

In 1951 the Dry Creek School District adjusted its boundaries in the Sacramento County portion of the district. The area east of the Southern Pacific Railroad tracks in Sacramento County was transferred to the San Juan Unified School District. The boundary was adjusted to reduce the need for the Dry Creek District to transport students by bus across the Southern Pacific Railroad tracks (Sage Institute, 1985). Since 1951, minor adjustments have been made in the Dry Creek School District boundaries to reflect the construction of new subdivisions, roads and newly-created communities (Sage Institute, 1995).

The Dry Creek School District is approximately thirteen square miles in size. The major landmarks that identify the Dry Creek School District boundaries are a combination of roadways, commercial and residential properties and natural features. The northern boundary is defined by a 50-acre Hewlett/Packard computer manufacturing plant, the Roseville-operated Woodcreek Golf Course and the Del Webb "Sun City" senior community. The eastern boundary of the Dry Creek School District is formed by the NEC Electronics computer chip manufacturing plant, Foothills Boulevard (a six lane transportation artery) and the Union Pacific Railroad tracks. The southern boundary of the Dry Creek School District is formed by Antelope Road, the original southern boundary. The western boundary is formed by Walerga Road in Sacramento County, a section line in Placer County and Fiddement Road in Placer County. The Dry Creek School District service area is almost evenly divided in thirds among unincorporated Sacramento and Placer Counties and the city of Roseville. The namesake of the district, Dry Creek, is a tributary of the Sacramento River that runs east-to-west through the center of the school district. Contrary to its name, Dry Creek flows continuously through the year and is a major watershed for southern Placer County and northern Sacramento County (see Figures 1 and 2).

Dry Creek School District 1870 to 1980

Early records indicate that the original Dry Creek schoolhouse was similar to other rural single schoolhouses in the western United States. It was a simple structure erected by the community to serve as a school for the children of the community. District records indicate that as early as 1872, a school operated on the current Dry Creek School site. The schoolhouse was blown off its foundation by strong winds in 1872, repainted in 1877 and later in the same year a well house was added. In 1887 an anteroom was added to the one-room school, and this remained the basic school for almost 40 years. By 1926 the original structure was found to be unsuitable as a schoolhouse and the Board of Trustees replaced the original building with a vacant Baptist church from the Antelope community. The church was moved to the Dry Creek site by rolling it on logs and telephone poles. Once placed on its foundation, an additional classroom was constructed next to the church building (Sage Institute, 1985).

California experienced an earthquake registering 6.4 on the Richter Scale on March 11, 1933, at 5:54 P.M., one that became known as the Long Beach Earthquake.

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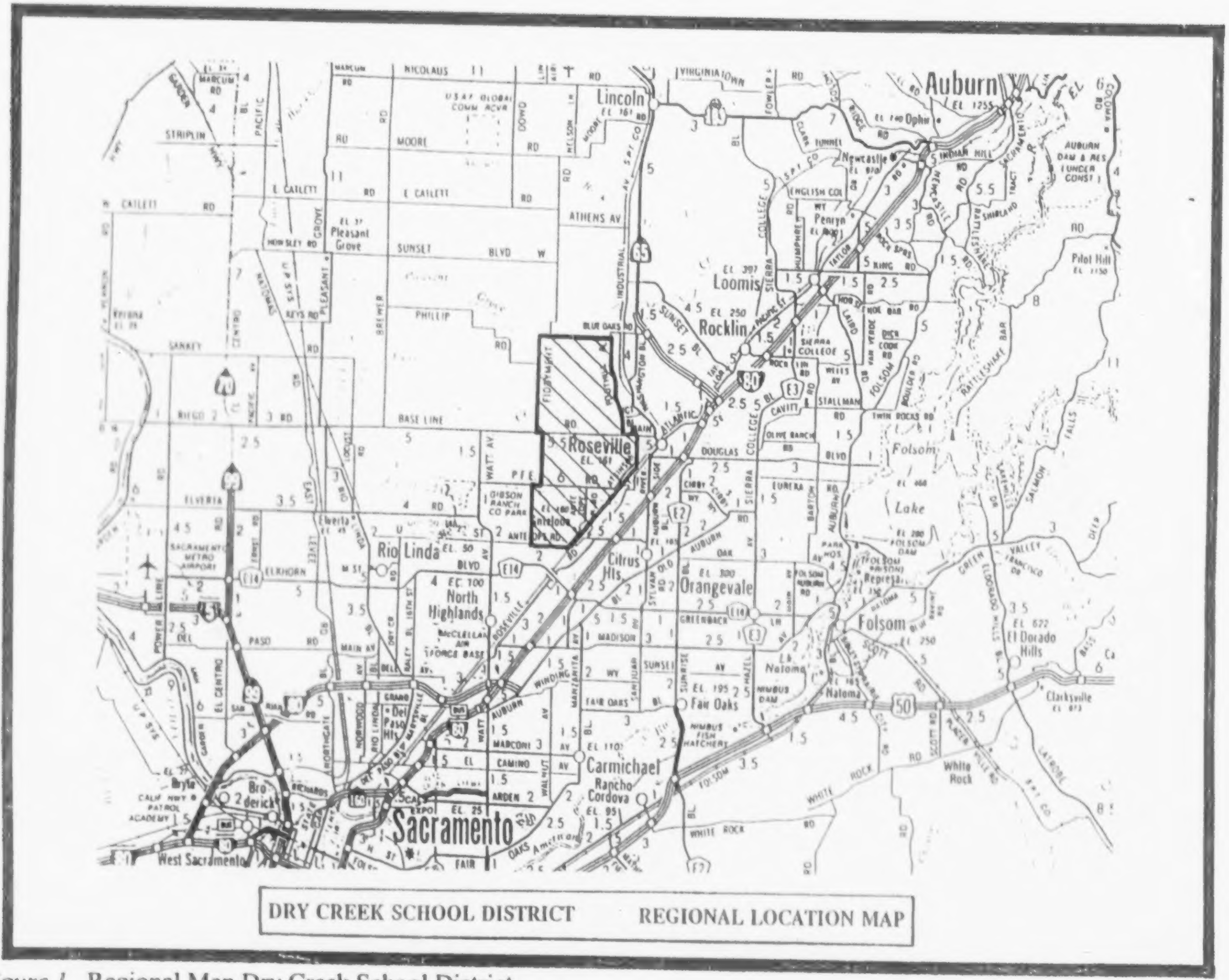

Figure 1. Regional Map Dry Creek School District

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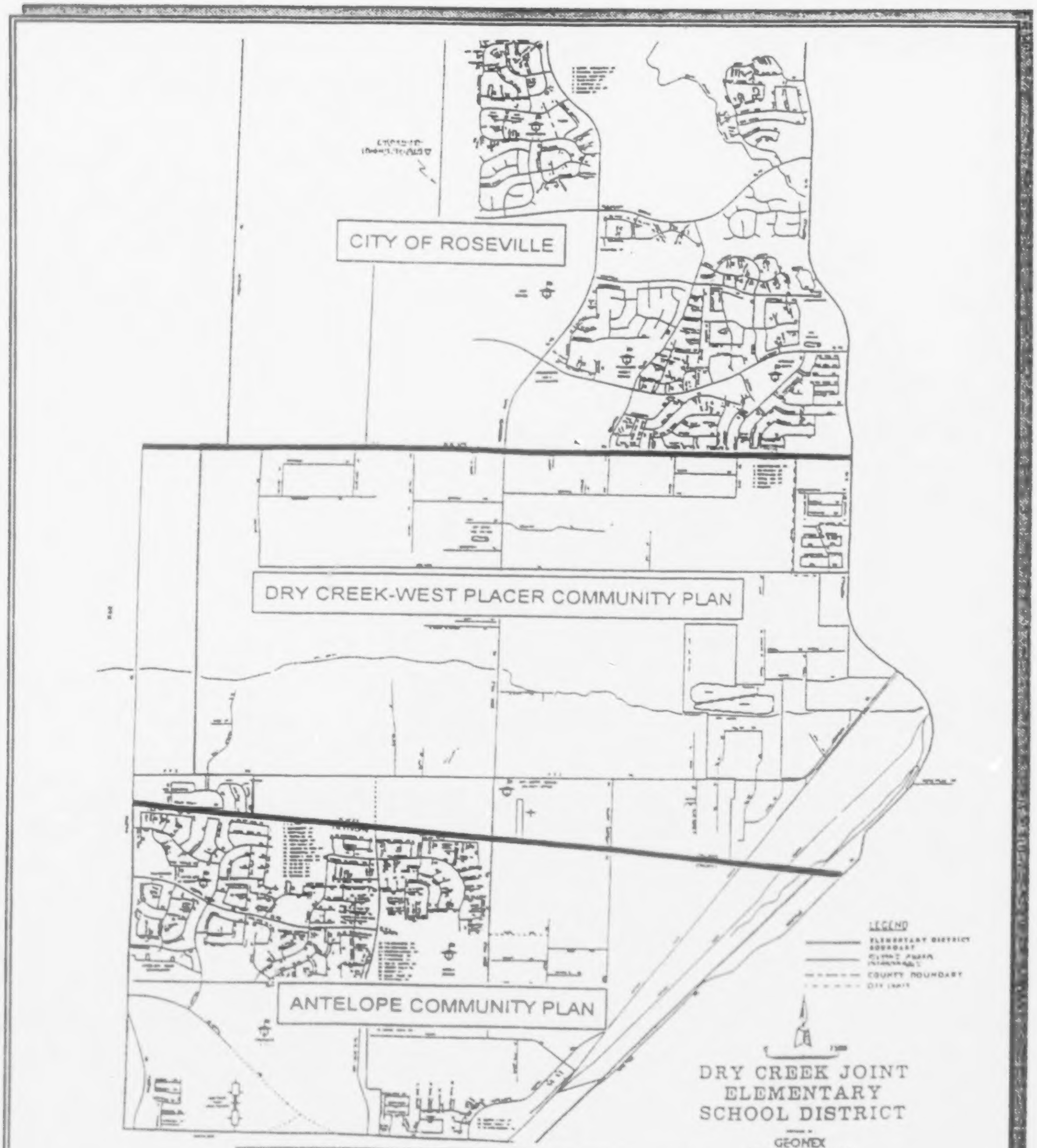
CITY OF ROSEVILLE
DRY CREEK-WEST PLACER COMMUNITY PLAN
ANTELOPE COMMUNITY PLAN
LEGEND
COUNTY BOUNDARY
DRY CREEK JOINT ELEMENTARY SCHOOL DISTRICT
GEOMEX
DISTRICT BOUNDARY & PLANNING SUB-AREAS

Figure 2. Dry Creek School District Boundary Map

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The earthquake killed 120 people in the cities of Long Beach and Los Angeles, and destroyed a number of buildings, including several schools. No students were killed in the damaged schools, since the quake occurred after regular hours. The California legislature immediately passed legislation that became known as the Field Act to mandate seismic standards for public schools (California Institute of Technology, 1997; Officials, 1997). The existing Dry Creek schoolhouse/church failed to meet this new standard and a

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replacement building opened in 1935. The new facility continued to house the self-contained, one-room school instructional program. The new Dry Creek School had one large classroom, a kitchen area, a stage, restrooms, a basement office and a basement boiler room (Sage Institute, 1985).

The 1944-45 school year marked the last term of the self-contained, one-teacher school, and in 1947 a second classroom was attached to the existing Dry Creek School building. Dry Creek School District enrollment increased slowly until the mid-1950s; the school remained unchanged.

Forty-two students were enrolled in 1950 at the Dry Creek School, but by 1960 the number had increased to 168. To accommodate the additional students, the district issued a construction bond in 1953 that built two additional classrooms and an office with a supply room. In 1958 an additional wing was added to the Dry Creek site, housing two additional classrooms and male and female restrooms. A single classroom was constructed in 1966, which completed the wing begun in 1958 (Sage Institute, 1985).

During this period of expansion, classrooms and support facilities were added to Dry Creek School with little consideration for instructional programs other than multi-graded, self-contained classroom instruction. The construction of the buildings reflected the economies of design that were prevalent during each decade. During the 1950s the first wing was built with an exposed truss system to support the roof, and the classrooms had wood panel walls. In the 1960s the construction material of choice was cider brick CINDER BLOCK ? with a moderately ? vaulted ceiling. Both classroom wings of the school were constructed in single rows situated on an east/west axis to take advantage of both sunlight and the prevailing breezes. The interiors were modest, with vinyl tile flooring, two chalkboards on adjacent walls and a small tackboard attached to the chalkboards. Each room had sinks with cold water and drinking fountains. A low-pressure boiler and radiators provided heat in the two oldest buildings, while a forced-air gas furnace heated the last classroom wing. Shelves under the north-facing windows and cabinets running the width of the room on wall provided storage. Since each classroom was similar to the others, the teachers and students had a uniform instructional program in the self-contained classrooms.

The later addition of mandated programs required the use of non-traditional spaces for instruction at the Dry Creek School site. The rear portion of the stage was converted into a library; the small kitchen in the meeting room became the space used by such special education programs as speech therapy and resource classes. The space was eventually modified again to provide a food service preparation area. The large room in the oldest building served a number of uses as enrollment increased. These included a single open classroom for multi-graded primary instruction, two spaces divided for classes of different grades, an open-space meeting room, a meal serving area, and a School Board meeting room. In every case, the program had to conform to the room and its limitations (Sage Institute, 1985).

Slow, steady growth continued in the Dry Creek District until the 1973-74 school year. A series of devastating explosions in the nearby Southern Pacific rail yards destroyed homes and buildings in the district (Janssen, 1997), and resulted in many families moving from the area and the school district. Enrollment dropped from 200 students to fewer than 100 during the weeks after the explosion (Weber, 1978).

Enrollment remained depressed for several years as homes were rebuilt and the safety of the community was re-established (Weber, 1978).

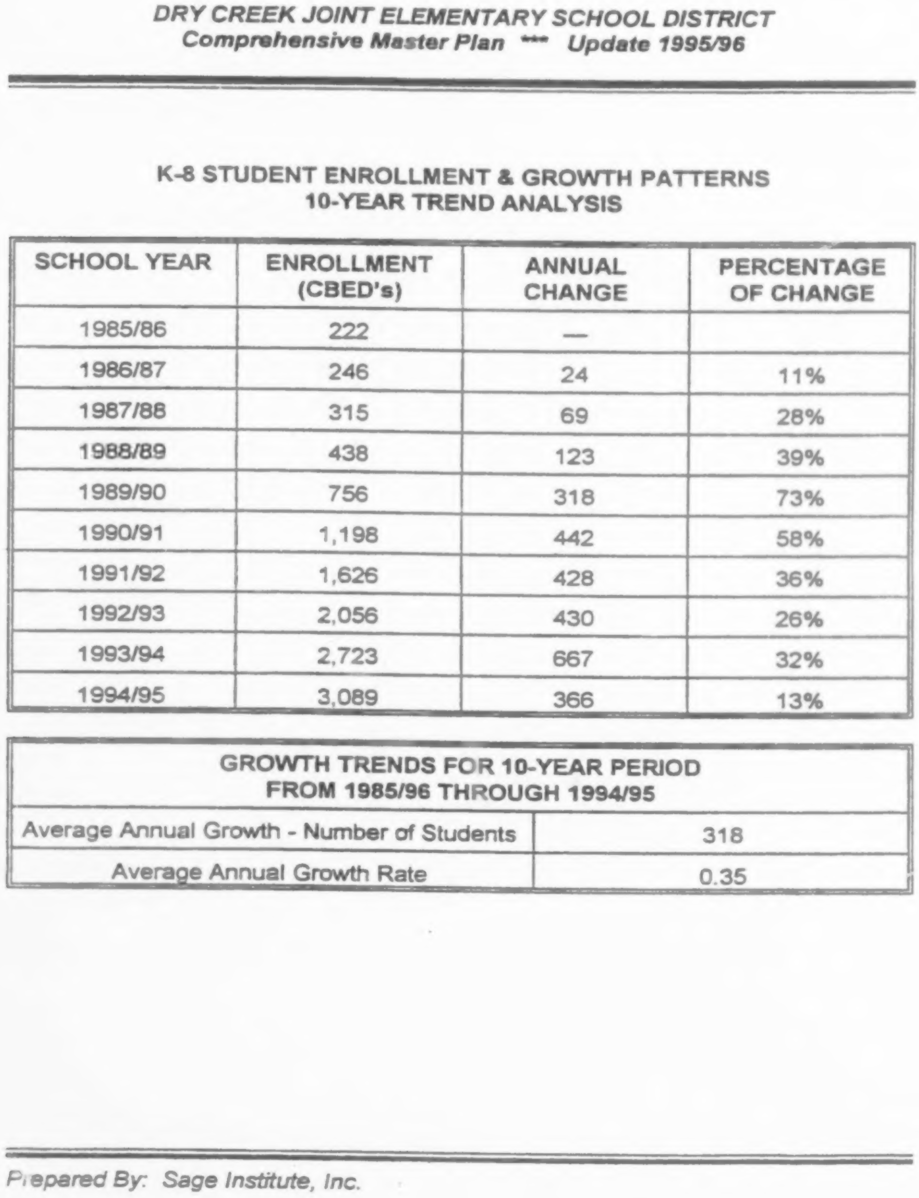
Planning Processes from 1980 to 1990

By the early 1980s plans were being made that would change the face of Dry Creek School District. Major tracts of agricultural land in the northern and southern portions of the school district were planned for development. The Dry Creek area was attractive for development because it is 50 feet above sea level, five miles from the city center of Roseville and fifteen miles from the center of Sacramento. The 1980 census reported that the two major employment fields for Dry Creek residents were commercial business and government (Sage Institute, 1985). Dry Creek School District was within easy comminuting distance for the residents whose state and federal jobs were located in the city centers.

Dry Creek School District anticipated intense residential development, spurred by the creation of a new industrial park for high technology, the approval of new freeway access and changes in the land use designations (Sage Institute, 1985). "Fortune 500" companies began to negotiate for large parcels of land in or near the Dry Creek School District boundaries. These companies included Hewlett/Packard, NEC Electronics, 3M, Herman Miller Office Furniture, ACE Hardware and Supply, Albertson's Markets and Intel. In response to the potential increase of residential development and enrollments in the Dry Creek District, the Dry Creek School District Board of Trustees in April, 1980, passed Resolution 1980-1, "A resolution finding that a condition of overcrowding exists

Table 1

K-8 Dry Creek School District Student Enrollment and Growth Patterns 10 Year Trend Analysis



DRY CREEK JOINT ELEMENTARY SCHOOL DISTRICT
Comprehensive Master Plan * Update 1995/96**

K-8 STUDENT ENROLLMENT & GROWTH PATTERNS
10-YEAR TREND ANALYSIS

SCHOOL YEAR	ENROLLMENT (CBED's)	ANNUAL CHANGE	PERCENTAGE OF CHANGE
1985/86	222	—	
1986/87	246	24	11%
1987/88	315	69	28%
1988/89	438	123	39%
1989/90	756	318	73%
1990/91	1,198	442	58%
1991/92	1,626	428	36%
1992/93	2,056	430	26%
1993/94	2,723	667	32%
1994/95	3,089	366	13%

GROWTH TRENDS FOR 10-YEAR PERIOD FROM 1985/96 THROUGH 1994/95	
Average Annual Growth - Number of Students	318
Average Annual Growth Rate	0.35

Prepared By: Sage Institute, Inc.

within the Dry Creek Joint Elementary School District" (Camp, 1980). The resolution was the first official notice by the Dry Creek School District that student enrollment would exceed the capacity of the existing school facility.

In February, 1982, Dry Creek School District responded to a request from the city of Roseville regarding a proposed subdivision to be built within the Dry Creek School District. A tentative map for the Rose Garden Subdivision was filed with the Planning Department for initial review and contained 278 single-family lots, making it the single largest subdivision to date in the Dry Creek District. The district's response to the city of Roseville stated that the subdivision would require the reservation of a school site of approximately 10 acres in the north section of the subdivision. Dry Creek School District also requested that the reservation of the school site should be a part of the conditions required to approve the Rose Garden tentative map (Lee, Comments to subdivision map. February 17, 1982). The school site would eventually become the location of the Heritage Oak Elementary School.

Responding to the emergence of information about the possible development of the properties in the Dry Creek district and the need for new schools, the Board of Trustees in 1983 authorized the initiation of a comprehensive master planning process that would expand the self-contained instructional program of the Dry Creek School to accommodate the anticipated increase in students, teachers, classrooms and schools.

When the board approved the initiation of the facilities master planning process, Dry Creek School District was in the position of having plans for significantly more homes constructed than currently existed in the entire district. The potential increase in residential construction was attributed to revisions in land use allocations within the Sacramento County and Roseville portions of the Dry Creek School District. In Sacramento County, agricultural land was being considered for rezoning from farmland to a projected 7.7 residential units per acre in the antelope area. Approximately 1000 acres of land were included in the request for rezoning. These proposed 7300 residential units would generate approximately 2800 K-8 students in the Dry Creek School District. Concurrently, 670 acres in the Roseville portion of the Dry Creek District were also being considered for rezoning from agricultural reserve to residential development. The rezoning request also sought a residential density of 6.2 units per acre that would generate approximately 5200 residential units and 2700 K-8 students (Sage Institute, 1985).

The wisdom of the Dry Creek School District Board of Trustees was validated by the rapid student enrollment growth in the district in the late 1980s. In 1980 there were 155 students enrolled in the Dry Creek School District. Enrollment grew to 175 students in the 1983/84 school year and to 198 students in 1984/85 (Sage Institute, 1985). By 1989/90 the enrollment was 756 students (Sage Institute, 1995), and by the 1997/98 school year 4,400 students were enrolled in the Dry Creek School District, representing an increase of more than 2,700 percent during a fifteen-year period (Dry Creek Joint Elementary School District, 1984). The majority of the new students entered the district after 1990. The rapid increases in student enrollment earned Dry Creek School District the distinction of being the fastest-growing school district in California (see Table 1).

School District Facility Master Plan

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As a result of both residential and enrollment growth, plans for the expansion of Dry Creek School District required the services of an expert consultant (Kirschenstein, 1983). The Board of Trustees accepted the recommendation of the Dry Creek District administrator who served as superintendent, principal and teacher, that the issues and magnitude of a comprehensive master planning effort would be best served by retaining an expert consultant (Kirschenstein, proposal for services, March 18, 1983; Lee, personal meeting notes, March 18, 1983). Dry Creek School District joined a planning effort that involved four other school districts which served the Roseville/Dry Creek Community. The Sage Institute was retained to complete the area master plan (Kirschenstein, Contract for services, July 1, 1983). The services included:

1. Development of a comprehensive Master Plan for each school district
2. Revision of the school district fee policy to mitigate the impacts of residential development
3. Assistance in the Sacramento County Land Use Study of the Antelope area
4. Coordination of efforts between the Dry Creek School District and the Roseville City Planning Department in completing the Land Use and Public Facilities Policies for the Northwest Roseville Specific Plan
5. Assistance in the revision of the Roseville General Plan
6. Investigation of possible joint use with the Roseville Parks and Recreation Department
7. General consulting for planning and related issues

The cost and information gained from the master plan would be shared by the school districts. The Sage Institute proposed a budget of $50,000 to complete the master plans for each of the school districts and suggested a partnership between Dry Creek School District and the developers of residential subdivisions within each district to help fund the cost of the planning process (Kirschenstein, personal letter, July 1,1983). The approximate cost of the facility master plan to Dry Creek School District was more than the total budget reserves of the district.

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Facilities Master Plan Advisory Committee

On July 14, 1983, the Board of Trustees began the formal master planning process by directing the superintendent/principal to hold an "in-service workshop" August 2-3, 1983. The workshop included representatives from the school district staff, Board of Trustees and the Dry Creek community. Together the task force began the "initial stage of a district-wide master plan for growth and facilities planning" (Lee, personal letter, July 13,1983). In preparation for the Board workshop, the Sage Institute submitted a questionnaire that would begin the discussion of basic policies that would eventually guide the district as it emerged from a single-school district into a mid-sized school district (Kirschenstein, personal letter, July 17, 1983). The results of that workshop were reported at the Board of Trustees meeting on August 11, 1983. Upon the recommendation of the Dry Creek Superintendent and the Sage Institute, the Dry Creek Trustees commissioned the formation of the Dry Creek Facilities Master Plan Advisory Committee (FAMPAC). The advisory committee would be composed of two district trustees, one district administrator, one staff member and three community members (Minutes Board Meeting, August 11, 1983). The charge of FAMPAC was to develop and return to the Board a comprehensive facilities master plan. The Sage Institute facilitated the planning process and prepared the final comprehensive long-range facilities/finance master plan. The Board of Trustees named the FAMPAC members at a Board meeting held on August 31, 1983 (Lee, 1983).

The first meeting of FAMPAC was held on September 14, 1983, at Dry Creek School. The president of the Sage Institute, Dr. Joel Kirschenstein, facilitated the meeting and shared the scope of FAMPAC's responsibilities. He also indicated that the Dry Creek School District was among fewer than ten percent of California school districts planning facilities prior to their immediate need. Dr. Kirschenstein reported that a number of requests had been made to process amended land use documents, and Dry Creek School District had the potential for a significant increase in residential construction.

Another significant part of the Dry Creek School District master planning effort would be exploration of various options for financing needed school facilities. The planning effort would also include the use of additional consultants: Dr. Glen Ovard, professor of Education at Brigham Young University and a specialist in instructional programming and school facilities, and Dr. Leona Williams, superintendent of the Val Verdi School District and an expert in curriculum design. The process of planning schools would be driven by the Dry Creek School District's instructional program. The financing of the process and the master plan would be a joint effort between Dry Creek School District and the developers who would be constructing homes in the district. Cooperation between developers and school districts on such a program was described as unique in California (Minutes FAMPAC, September 14, 1983).

The importance of the planning process was underscored by a local newspaper article about the crowded Roseville area school districts seeking to increase residential building fees to help provide additional permanent school facilities (McKinney, 1983). The school districts were requesting an increase in the current school fees paid by developers above those paid for portable classrooms. The increased amounts would be used to construct permanent facilities. If the residential developers refused to increase their fees for school facilities, the school districts proposed that Roseville impose a limit on residential growth of less than two percent per year (McKinney, 1983).

The Sacramento County planning department was also informed about the potential impacts of increased residential development in the Dry Creek School District. The district requested support from Sam Miller, Director of Planning and Community Development in Sacramento County, and builders in the Sacramento County portion of the Dry Creek District for a comprehensive master planning process and increased fees for school facilities (Kirschenstein, personal communication, March 11, 1983; Kirschenstein, 1983). The Building Industry Association of Sacramento (BIA) responded to the district's request by inviting Dry Creek District representatives to present its planning process and request for assistance to their "Land Development Committee" (Latino, meeting agenda, October 10, 1983). Although the committee took no action, Dry Creek was invited to a second Building Industry Association meeting in December (Minutes, FAMPAC, October 25, 1983).

At the third FAMPAC meeting on October 25, 1983, Dr. Kirschenstein reported that recent meetings held with both the Director of Planning for Sacramento County and the Building Industry Association of Sacramento were constructive, and the request for support by Dry Creek School District was received with interest. The remainder of the FAMPAC meeting included discussions on the school setting, whether there would be a centralized or decentralized administrative structure, the grade level configuration of the new schools and the process used to select a principal.

FAMPAC concluded that the schools in the Dry Creek District should be community centers. The committee members expressed a desire to have close communication between the staff and parents, a pleasant low-key setting and a pastoral environment. To achieve such a setting, the district should plan school sites with adjacent park sites. Early cooperation between the school district and the various local governmental agencies would be necessary to accomplish this goal (Minutes, FAMPAC, October 25, 1983). FAMPAC recommended that the schools constructed in the Dry Creek District operate with a decentralized form of administration allowing the sites maximum autonomy. The committee members also expressed a desire to consider several grade level configurations, which could be implemented as new schools are added to the district. Major changes in the operations of the school district would require study and community discussion prior to a recommendation to the Board of Trustees. These issues would be discussed in greater detail at future meetings (Minutes, FAMPAC, October 25, 1983).

City of Roseville General Plan Review: Public Facilities Element

As the facility master planning process for the five school districts continued, the mayor of Roseville, Richard Roccucci, sought to add the city's support to the planning efforts of the school districts by requesting a meeting in his office with a school board member from each of the five school districts involved. The discussion would be to continue the "good working" relationships between the school districts and the city, and in particular the joint planning of athletic facilities (Roccucci, personal letter, October 26, 1983).

During the same period of time Dry Creek School District FAMPAC was meeting, the City of Roseville was on an accelerated schedule to revise its Land Use Element of the General Plan. The fast tracking of this process would allow the City to participate in a regional special assessment district and that participation would provide increased sewage treatment capacity. Amending the city's General Plan would also provide the local school districts with a significant opportunity to influence the formation of local public policy regarding the priority schools would have as the population of the Roseville increased.

As part of the Land Use Element revision, the population base of Roseville was increased from 12,000 to 92,000 residents through 2020. The revision of the General Plan also required a review of the environmental impacts on the various services within and around the city limits, including public schools.

The Environmental Impact Report (EIR) of the General Plan Revision contained a section of comments directly related to public facilities and, in particular, public schools. Attorneys for the school districts in the Roseville area reviewed the EIR and submitted correspondence stating that the EIR was inadequate because "it failed to identify the adverse impacts on schools within the City because of growth projected by the land use element and, therefore fails to address required mitigation measures" (Schulz, 1983). Two policies would have to be added as a part of the EIR to address future schools if the General Plan was to be amended. These amendments would require the actions of the city to be consistent with the school district facilities master plans. The major points of the policies included the size of school sites, joint planning of schools and parks, safety, enrollment capacity of school types, imposition of developer fees to mitigate the impacts of student enrollment growth and community use of school facilities (Fuller, 1983; Kirschenstein, personal letter, November 28, 1983).

The Roseville City Planning Commission included the request of the school districts as an amendment to the draft EIR (Kirschenstein, 1983). The amended draft EIR was then submitted to the City Council for consideration. In recommending the draft EIR to the City Council, the Planning Commission specifically stated their concern about the importance of providing the necessary public schools to serve any increase in the population of the city. The commission comments became a part of the hearing record. The nine specific areas of concern were:

1. The general location of schools within the city
2. The acreage necessary for combined elementary school/park sites
3. The acreage necessary for combined secondary school/park sites
4. The street access and traffic circulation around school sites
5. The approximate enrollment size of elementary schools
6. The approximate enrollment size of secondary schools
7. The use of mitigation funds to plan the instructional program of the schools and the construction of facilities related to the instructional programs
8. Consideration by local school boards of special facilities for community use
9. The need for individual school districts to design and build school facilities according to their district standards.

In addition to the nine concerns, the Planning Commission also stated that all existing schools within the city of Roseville were impacted by increasing student enrollment with no means, either locally or from the state, to fund the needed new school facilities. Some form of mitigation must be adopted by the city to provide new schools when they are needed. The commission also recognized the need for long-range planning to designate and locate new school sites in accordance with an approved site selection process (City of Roseville, 1983; Wiese, Memo, December 15, 1983).

The Roseville area school districts received final drafts of the Land Use Element of the Roseville General Plan and its EIR in preparation for a hearing before the City Council (City of Roseville, 1983). On December 29, 1983, the Roseville City Council held hearings on the revision of the Land Use Element of the General Plan and certified its EIR (City of Roseville, 1983). The school districts' consultant stated that the certification "represent(ed) only the foundation for targeted growth areas and additional work will be need to (be) accomplished in order to insure that the basic policy statements as presented (would be) put into actual use" (Kirschenstein, Executive summary, January 5, 1984).

The City Council held a second meeting on the topic January 4, 1984, to review the changes recommended at the previous meeting. Final adoption of the Land Use Element of the Roseville City General Plan occurred on January 11, 1984. The adopted revisions included the various changes requested by the school districts (City of Roseville, 1984; Lee, personal letter, January 11, 1984).

The mid-December meeting of FAMPAC discussed the instructional programs that were being taught at the Dry Creek School. The committee also considered other possible offerings within the instructional program and prepared visitations to other school districts. FAMPAC members felt it would be valuable to hold a town hall meeting on January 19, 1984, to provide information about instructional program options under consideration and to obtain community comments about their preliminary findings (Minutes, Board Meeting, December 15, 1983).

Funding Partnership for Facility Master Planning

At the end of December, 1983, the Dry Creek School District received a legal opinion that provided an opportunity for the district to create a partnership with the residential developers in the district. The opinion stated that although a local school district could not change the existing fee structure to mitigate the impacts of residential development without an action by the local governmental agencies (e.g. City Council), the district could receive cash donations to be used for facility planning and waive fees for a particular development (Lewis, 1983). With this information the district was able to prepare an appeal to the residential developers in the district and seek funding for the planning, financing and construction of schools within the Dry Creek School District.

With the assistance of the Sage Institute, Dry Creek School District began to identify the benefits and costs that would accrue to a residential developer if they helped to fund a district facility master planning effort. Key to the success of a fund raising process was the participation of a major land developer. The single largest landholder of undeveloped land in the district was the Carlsberg Development Company, with more than 6000 acres of land (Carlsberg Development Company, 1984). The district superintendent and the Sage Institute embarked on a joint venture with the Carlsberg Company to fund the Dry Creek Facilities Master Plan (Lee, 1984). A formula for assessment was developed that would fund the master plan based on the amount of acreage held by each developer within the Dry Creek School District. The fees contributed by the developers would be used to create the Dry Creek School District Facilities Master Plan and would also be used as a credit against any future school district developer fees (Dry Creek School District, 1984). The Carlsberg Corporation supported this agreement and allowed its name to be used in the solicitation of the remaining developers (Lee, personal letter, January 5, 1984).

The Carlsberg Corporation responded with the first contribution of $9,100 towards the Dry Creek School District Master Plan. With the support of the Carlsberg Corporation, many of the developers in the Dry Creek District also became partners in the funding of the district facility master plan. The total amount received by the district from developer contributions was $25,000, completely funding the initial district facilities master plan (Kirschenstein, personal letter January 25,1984; Lee, personal letter, February 3, 1984; Lee, personal letter, February 29,1984; Lee, personal letter, March 19,1984; Lewis, Proposed funding agreement, May 4, 1984).

Instructional Program Configuration

FAMPAC held a "town hall" meeting January 19, 1984, at the Roseville High School Parent Teacher Building to discuss the instructional program options for future Dry Creek students. Two hundred parents and community members attended the meeting, facilitated by Dr. Joel Kirschenstein of the Sage Institute. Guest presenters included Professor Ovard, Dr. Williams and Dr. Heber Meeks, Director of Instruction for the Alhambra School District, which operates a 1200-student K-8 school. Three options were discussed as possible configurations for future schools in the Dry Creek School District. The first option would be to continue the construction of all new schools in the district as K-8 facilities with enrollments between 600 and 750 students. The second option would be to build K-6 elementary schools with enrollments of 600 students, and construct departmentalized 7-8 grade junior high schools with 750 students. The third option would be to construct K-5 elementary schools with 600 students and 6-8 middle schools with 750 students.

After two hours of presentations and discussions, the three options were explored by the community, district staff and members of the Board of Trustees (School Newsletter, November 17, 1984; Lee, summary notes, town hall meeting, January 19, 1984). No conclusions were reached and FAMPAC continued its work of trying to provide a recommendation to the Board of Trustees about future instructional programs. A second town hall meeting was held March 13, 1984, seeking more community input, and members of FAMPAC made visitations to schools in the area with different instructional configurations (Minutes, Board Meeting, March 9, 1984; Minutes, Board Meeting, April 12, 1984).

The resolution naming which instructional program design would be implemented in the Dry Creek School District occurred at the May 10, 1984, Board of Trustees meeting. After reviewing the three options, hearing testimony for and against each proposal, the Board closed the public comment portion of the item and held a discussion on the merits of each program. At the request of the superintendent, the board members analyzed the instructional programs using a method recommended by Dr. Ovard in an earlier presentation, comparing the K-8 instructional program with the 7-8 junior high school and 6-8 middle school instructional programs. Through the use of this process, the Board came to the consensus that the K-6 and 7-8 program would not be an option.

The following is an excerpt from the official Board minutes of the May 10, 1984, meeting, and describes the thinking of the board members:

> Norma Anderson stated that she had supported 6-8 schools for flexibility of instruction, the facilities, and the fact that special staff, not administrators, can deal with adolescents' needs. Winston Detwiler indicated that he was a fundamentalist, and since his children had been successful at Dry Creek and had personal experience in a middle school program, he felt that the K-8 mode was superior to a middle school program for our needs and the needs of the community. Judy Reid was torn between K-8 and the 6-7-8 core program, seeing the advantages of both; however, based on community input and the success of Dry Creek School, she would favor continuation of the K-8 program. David Wiley indicated strong feelings of loyalty to (the) self-contained K-8 program, but after reviewing the FAMPAC material and trying to project the needs of the community, he felt that a 6-7-8 core program would better address a variety of needs as the community grows and evolves. Charles Barsdale spoke in favor of a K-8 school. As a member of FAMPAC and through personal experience, he had evaluated facilities and programs in Dry Creek and other school districts and strongly felt that K-8 provides a superior instructional program and should be continued in this district. There being no further discussion, it was moved by David Wiley and seconded by Charles Barsdale to discard from consideration the K-6 and 7-8 program. All members voted in favor. The motion carried. Judy Reid moved and Winston Detwiler seconded that the district adopt the K-8 self-contained program described in the FAMPAC materials. Aye: Judy Reid,

Winston Detwiler, Charles Barsdale. No: Norma Anderson, David Wiley. Motion carried.

Because there was strong consideration and a split vote for both the K-8 and K-5, 6-8 configured instructional programs, the Sage Institute suggested a contingency plan. The recommendation suggested that if 6-7-8 grade student enrollments exceeded the capacity of Dry Creek School, the 6-7-8 students could be consolidated temporarily on one site, and during this time educational programs could continue in the other school (Sage Institute, 1985).

The trustees enacted master planning policies at the May 17,1984, Dry Creek School Board Meeting. Along with the K-8 configuration of future schools, the Board also acted to plan future schools with enrollments that were no fewer than 500 students. This enrollment, less than the California public school construction program guidelines, provides the minimum square footage in a school to serve both the instructional requirements for a K-8 school and the necessary support services, i.e. administration, library, multipurpose room and storage. Schools with a K-6 configuration receive a basic allotment of 55 square feet per student in the entire school. In grades 7-12 the allotment is 75 square feet per child. The Board also approved the classroom loading standards for future schools (Sage Institute, 1985). The district policy established that normal assigned loading of classrooms would be as follows:

Regular classrooms	28 students per classroom
Special Education Classrooms	12 students per classroom
Chapter I Classrooms	12 students per classroom

Master Plan Elements

From the input of FAMPAC and the Board of Trustees, the Sage Institute prepared and presented the Dry Creek Comprehensive Master to the Board of Trustees in August, 1985. The master plan contained five divisions, plus an introduction and an appendix.

Division I: Educational Program

The first division summarized the history of the Dry Creek School District and the Dry Creek School site from its founding in 1876 through 1985. This division described the Dry Creek community, the educational goals and policies of the school district, the past self-contained instructional program, the future instructional programs for schools yet to be constructed, the instructional materials that would be used in the Dry Creek schools and the support services that would be provided as the district expanded its programs.

Division II: Educational Facilities

The second division was an analysis of the Dry Creek School District educational facilities that existed in 1984. Dry Creek School, the only school in the district at that time, consisted of nine classrooms and a design capacity of 263 students (Sage Institute, 1985). An evaluation of the facility revealed poor performance at the school, with only two areas of the nine considered in the average range and one in the good range (Sage Institute, 1985). Additional concerns were expressed regarding the safety of the children attending Dry Creek School. Increased vehicle traffic and a lack of street improvements and traffic signals were cited as potential hazards to students and parents at the school. In addition, a private airstrip was operating adjacent to the school site (Sage Institute, 1985). In closing the second division, the Master Plan states:

> The existing facility should be evaluated from a perspective of its long-range capacity as an educational facility. The overall adequate to poor rating of the original facility questions any plan which would retain the present facilities in their existing condition. The comparative large number of design deficiencies raises the question as to the present site being maintained as a permanent facility. (Sage Institute, 1985, p. 63)

Division III: Demographic Study

The third division provided information about the inhabitants of the Dry Creek School District. This information was obtained from the 1980 census, annual Dry Creek School District reports and studies and projections of residential development. The basic data obtained from these sources were extrapolated to provide the basis of student enrollment projections. To accurately monitor the changes in residential development and student enrollments, the district was divided into seven demographic study areas based on United States Census tracts. As enrollment increased in the district, each study area was systematically evaluated and updated. This information became the basis for projections that eventually included statistical analysis and mapping of enrollment variations. Each development, new proposal and project were assigned to the appropriate study area. The information from each study area was aggregated and used to make projections of district enrollment increases. The student enrollment projections and land use information were used to predict the amount and timing of future school facility needs and their approximate locations.

The 1985 Master Plan estimated that by the year 2000, between 1,500 and 6,000 new residential units would be constructed in the Dry Creek School District. When the projected residential development is constructed, there will be more than 12,600 new residential units in the district. The average projected residential construction rate within the Dry Creek School District was predicted to between 200 and 550 students per year, totaling 7,200 students when the construction was complete (Sage Institute, 1985).

Projections of increased residential construction in the Dry Creek School District created a commensurate projection of increased student enrollments. The future increases in enrollment were based on historic yield rates from similar housing types in the area and within Dry Creek School District. A caution was noted in the Master Plan to consider the effects of external variables that would effect the number of students that may result from new residential development:

> It is the responsibility of those utilizing projections to examine all the known facets of possible influence on population, regardless of how these factors may appear. Subjective judgment must be based on analysis of objective data and qualified judgment. No forecast can be expected to be exact, and especially so in areas where rapid change is taking place. Projections are necessary tools for anticipating and planning for future facility requirements, and for most users the value of the forecasts lies not in their absolute accuracy, but in their functions as indicators of trends and measures of anticipated change. (Sage Institute, 1985, p. 84)

The initial Master Plan contained six refinements to the standard yield rate calculation and divided the final projections into three separate growth rates after three years. The intent of providing a range of projections after three years was to allow planning options for slow, moderate and rapid enrollment growth in the district (Sage

Institute, 1985). Student enrollments were projected between 741 and 2106 students by the school year 2000 (Sage Institute, 1985).

Division IV: Implementation Plan

The fourth division contained Section A, describing the facility needs of the district, and Section B, how to finance the needed facilities. Division IV was based on the demographic and planning data related to the existing and projected enrollments, attendance areas and district educational standards and criteria described in the previous sections of the Facility Master Plan. The planning issues in Section A addressed the present Dry Creek School facility, its ability to house additional students, the need for future school sites and the types of schools to be constructed. The short-term concerns in the Master Plan were about Dry Creek School and its capacity to house larger numbers of students during an interim period as other facilities were constructed. In the 1985-86 school year, the Dry Creek School would be at its design capacity, and for many years beyond, additional temporary classroom and support facilities would be needed to house student increases in the district. By 1990, Dry Creek School District would need some type of permanent facility response, such as a new school (Master Plan 85, p. 97). Beyond 1990 the Master Plan called for additional facilities, and the adjustment of school district boundaries. The planning process described in this division included recognition that flexibility would be necessary in the design of district instructional programs:

> Change is a necessary component for instructional advancement; therefore, all recommendations set forth require additional scrutiny and focused application in order for the district to find its own best way and to identify its own strategic paths for maximum success of the overall student populations and community benefits. (Sage Institute, 1985, p. 98)

The Dry Creek School District board policy described the instructional configuration of future Dry Creek schools as kindergarten through eighth grade on the same campus. In consideration of the comments made by the planning consultant, an alternative grade level configuration was also described in the planning process. The suggested alternative was a kindergarten through fifth grade configuration on one campus, and the sixth through eighth grades on another campus configured as a middle school. The established enrollments for the school were:

District Plan Loading	District Loading	Peak
K-8	600	750
K-5	500	600
6-8	650	750

(Sage Institute, 1985, p. 100)

The projected number of needed schools was estimated by applying the existing school capacity (263 students) to the enrollment projections described in Division III. The additional required schools are summarized in Table V of the Master Plan. The K-8 schools range from one to three by the year 2000. The alternative grade level assignment of K-5 schools ranged from one to four schools with either one or two middle schools (Sage Institute, 1985).

In addition to the construction of new school facilities, other interim programs may be required by the Dry Creek School District to ensure that space is available for students when needed. They may include portable classrooms, transporting students to schools that have additional capacity and renovating existing facilities to increase their capacity. The need to provide additional facilities and classrooms will also require the planning and purchase of furniture and equipment. The new furniture and equipment will also require the consideration of upgrading existing classrooms and facilities in an effort to equalize educational opportunities.

Central office administrative support will also increase with the growth of the school district. This is of particular importance to small school districts in California like Dry Creek.

California school districts having fewer than 1000 students are considered "direct service school districts." The designation of "direct service" allows small school districts to receive administrative and student support services from their county offices of education. Such services include budget development, assistance in personnel practices, legal reviews, special education services and many other programs. After 1001 students are enrolled, the school district must assume these responsibilities. The additional personnel and programs must be housed within the school district facilities. In anticipation of this change in services, the Master Plan stated:

> The District should now begin to formulate a plan to acquire Central Office facilities which will be consistent in size, location and adequacy for an elementary school district with the potential for approximately 6,000 students at 8 - 10 locations. Warehouse and maintenance facilities likewise will need to be expanded in size and people to accommodate the demands of the larger school district. (Sage Institute, 1985, p. 115)

Section B of Division IV considered the methods that were available for the Dry Creek School District to fund the school facility construction described in Section A. At the time of the initial Master Plan, funding of public schools in California was problematic. The recent passage of tax reform legislation dramatically reduced the ability of public schools in California to pass local bond measures to finance school facility construction. This was compounded by the lack of state funds to build public schools. The Master Plan addressed the lack of adequate funding for school facilities by seeking to implement a combination of methods to finance school facility construction:

> Current law permits counties, cities and/or school districts under certain circumstances to engage in alternative methods of assisting school districts in acquiring new school facilities. However, because most, if not all, of the alternatives have limiting features, no single option appears to provide a solution to all current facility needs. Consequently, in order to provide adequate housing for the student population, new methods of acquiring school facilities and sites must be created at the state or local level in order to keep pace with growth and development. (Sage Institute, 1985, p. 119) (Note: in 1986 the California legislature passed school facility reform laws that addressed the issues raised in the original district master plan.)

To fund the facilities needed by the Dry Creek School District Master plan, it was recommended that local government agencies serving the district adopt a course of action which would allow for an "online funding of programs or policies for contingency development of programs" to house the increase in students produced through their approval process (Sage Institute, 1985). The actions required of the local planning agencies would include funding for both permanent and temporary school facilities and that the funding would be required prior to the final approval of any residential projects.

The sources available to California school districts for the acquisition of facilities were listed in this section of Division IV. Of theitwenty methods mentioned, the Dry Creek School District had independently implemented many of them, while others required the support and authorization of other local and state agencies. The major methods employed by the Dry Creek District included developer fees, mitigation fees based on the California Environmental Quality Act (CEQA), the Leroy Greene State School Building Program, the use of state emergency classrooms, deferred maintenance funds, site dedications of land and lease/purchase of relocatable classrooms (Sage Institute, 1985).

Division IV concluded with recommendations to deal with the anticipated intense planning and approval requests for residential development within the Dry Creek School District. The recommendation would become the basis for future actions as the district seeks to achieve mitigation for increased student enrollment. These recommendations include an aggressive effort at both the state and local levels to secure school funding, the identification of school sites, the need for policies to work with the local planning authorities and the development of joint use programs within the district (Sage Institute, 1985).

Division V: Master Plan Updating and Evaluation Procedures

The Facilities Master Plan of the Dry Creek School District was a description of the processes and planning necessary to provide appropriate school facilities. As the conditions for development within Dry Creek School District change, the Master Plan must incorporate them into the planning process and the Master Plan must be amended as necessary. The last division addressed these issues and provided for an ongoing evaluation of the entire planning process:

> The Dry Creek Joint Elementary School District Board of Ttustees, by accepting this document, is stating its policy to continually evaluate and review its Master Plan, to make use of the findings and recommendations in its planning for the future and in its dealing with the community, local developers and state funding sources. (Sage Institute, 1985, p. 145)

The continuing process of revision and updating is the responsibility of the superintendent, and Division III of the Master Plan will be revised annually to reflect the actual construction of homes and schools, population changes and changes in the economy that would affect the long-range projections of the district. (Note: major revisions of the Dry Creek Facilities Master Plan have occurred in 1990 and 1995 (Sage Institute, 1995). In addition to the annual revisions of demographic information (Division III), the district also revised Division IV when school facility and funding legislation were adopted and case law clarified several legal questions.

Initial Facilities Master Plan

By the end of 1984, Dry Creek School District had completed the initial portions of a comprehensive facilities master planning effort. The district had retained an expert consultant, developers would fund the planning process and basic instructional policies were adopted by the Board of Trustees. Land in the district was being systematically rezoned from agricultural use to commercial, residential and public uses, and policies to mitigate additional students generated by the increased residential subdivisions were appended to the General Plan of the city of Roseville. Dry Creek District was prepared with the mechanisms that would fund, design and construct the schools necessary to house and educate present and future Dry Creek School District students.

During the next several years, the district was able to achieve significant agreements that would assist in the implementation of the instructional programs in Dry Creek School District. By the end of 1985, Dry Creek and its neighbor, Center Unified School District, had reached an agreement with the developers in the Sacramento County portion of the districts to fund interim school facilities. The funding of the facilities would require Sacramento County to impose a fee on new construction. On February 26, 1986, the Sacramento County Board of Supervisors adopted the agreement as a part of the Public Facilities Financing for the Antelope area (Ziegler, 1986).

The actions of the Board of Trustees would be reviewed at a later date when more residents would live in the district. The actions of the board allowed planning for additional school sites following the Facility Master Plan within the emerging residential areas. Later that year, both the city of Roseville and the county of Sacramento began to revise their local planning processes. Roseville sought to revise its Public Facilities and Services Element of the General Plan and Sacramento County circulated a draft plan outlining the infrastructure required in the Antelope portion of the county (Lee, personal communication, August 9, 1984; Minutes, Board Meeting, August 9, 1984).

The development of the comprehensive master plan set into motion an evaluation of the current and future expectations of the Dry Creek community and school staff. Some of the topics included:

1. A policy decision regarding in-district organizational structure, i.e. K-8, K-5 and 6-8 or K-6 and 7-8.

2. A policy on the enrollment size of schools based on the type of instructional organization.

3. Expansion of the existing Dry Creek School.

4. Determination of the need for future sites and the number of schools required.

5. An evaluation and development of curriculum, including course content and curriculum guides.

6. Increasing articulation of curriculum between Roseville High School District and the other local elementary school districts.

In preparing their report, FAMPAC reviewed several environmental factors that would impact the Dry Creek School District. They included the Dry Creek community and the area around it, employment opportunities, the Dry Creek School profile, the social policies of the district, the relationships the district has with other public agencies and the role of community involvement in the operation of the district and its schools.

The results of the FAMPAC study were reported to the Board of Trustees and included recommendations for alternative grade level organizational patterns that could be implemented in the Dry Creek District. The recommendations were made after public meetings, a literature review, input from California public school resources, field visits to schools with various organizational structures (K-8 self-contained, K-8 with 7-8 grade centers, K-8 with magnet programs in the 7-8 grades) and two Dry Creek community town hall meetings.

The committees report was reviewed by the Dry Creek Board of Trustees at a public hearing May 17, 1984, and they voted 3-2 in favor of maintaining the self-contained K-8 instructional program for the districts master planning process (Sage Institute 1985, p. 23).

Instructional Program

The next major phase in the planning would be the determination of the instructional program that would be taught in the facility. As a result of earlier actions, many of the parameters were already determined. These included the size of the campus, the enrollment, the grade level configuration, the need for cooperation with park districts and the desire to provide community-based schools.

Designation of the Heritage Oak Elementary School Site

In April of 1988, the Planning Commission for the city of Roseville held public hearings on the draft Environmental Impact Report (EIR) for the Northwest Roseville Specific Plan (City of Roseville, 1988). A portion of the EIR identified the location of three proposed school/park sites for Dry Creek School District. One site, consisting of eighteen acres, would become Heritage Oak Elementary School. The EIR was approved by the Planning Commission and was sent to the City Council for final action. With approval of the EIR, the district sought and received approvals in May, 1988 from the California Department of Education and the Office of Local Assistance to proceed with the planning and purchase of the school site portion (10 acres) of the eighteen acres (Dry Creek Joint Elementary School District, 1989 B).

On June 2, 1988, the Roseville City Council approved the Northwest Roseville Specific Plan EIR. By the end of the summer, the architectural firm selected to design Heritage Oak School, Stafford and King Associates, had reviewed the proposed school/park site configuration. Dry Creek District initiated a series of meetings with the Roseville Parks and Recreation Department to establish the preliminary conditions that would result in the joint planning of the school/park site (Dry Creek Joint Elementary

School District, 1989b). By the fall of 1988, Dry Creek School District had begun the process of preliminary design of the Heritage Oak School site.

The instructional program of the district changed during the summer of 1988. The superintendent of Dry Creek School District requested reconsideration of the instructional program for the district. A presentation was made before the trustees at the June 9, 1988, board meeting reviewing the instructional program opportunities of a middle school program. (Minutes, Board Meeting, June 9, 1988). After the presentation, the board directed the superintendent to hold a public meeting for comments about implementing a middle school program. On August 11, 1988, prior to the public hearing, members of Graham Middle School in Mountain View, California, made a presentation to the board on middle school programs. The vice principal, a teacher, a board member and a student presented information about their middle school program and answered questions from the board members and the community (Minutes, Board Meeting, August 11, 1988).

On September 8, 1988, the Board of Trustees held a well-attended public hearing on a proposal to implement a middle school program in Dry Creek School District. Several parents spoke in favor of the middle school and several were in favor of maintaining the K-8 configuration for all future schools in Dry Creek District. Each of the trustees spoke about their personal preferences for the instructional program to be offered in the district. At the conclusion of the hearing board members Freeman, Webster and Wiley voted in favor of the middle school facilities configuration, and Trustees Barsdale and Howe voted against the program. Trustee Howe made a second motion, to establish an educational specifications committee to implement the existing Dry Creek K-8 program into the middle school facility. The motion was support by all members (Minutes, Board Meeting, September 8, 1988). The action of the board established that new schools constructed in the Dry Creek School District would be configured as K-5 elementary schools and 6-8 middle schools.

During the period from 1986 through 1988, Dry Creek School District also continued to process the applications required by various state and local agencies in order to maintain a schedule for the timely construction of Heritage Oak School. Cooperating with Dry Creek School District effort to maintain the planning schedule were the city of Roseville, the residential developers in the district, the State Department of Education and the State Department of General Services (Dry Creek Joint Elementary School District, 1989b).

Instructional Programming: Educational Specifications

The next major phase of the planning process for the Heritage Oak Elementary School was determining what type of curriculum and instructional program would be taught in Dry Creek School District as new schools were added. Earlier actions by the board of trustees had defined many of the parameters of the anticipated curriculum and instructional program. These included the size of the campuses, the enrollments, grade level configurations, class sizes, the need for cooperation with park and recreation districts and the desire to provide community-based schools. Beyond the basic requirements of the facilities master plan and board policies, no specific directions existed to guide the design of schools in Dry Creek District.

In 1988 Dry Creek School District commissioned a process to determine the design criteria for new schools to be built in the district. The Dry Creek School District Board of Trustees authorized the development of an educational specifications document that would become the basis for designing new schools in the district (Dry Creek Joint Elementary School District, 1989).

The Dry Creek School District superintendent began implementing the educational specifications process by developing a strategy that would include the stakeholders in the school district. A variety of district representatives in this portion of the planning process were desired to identify the educational needs of the students, staff and community. To achieve this goal, Dry Creek District chose a comprehensive planning process under the direction of a special consultant. Dr. Ovard was hired to facilitate the process and develop education specifications for the Dry Creek School District (Dry Creek Joint Elementary School District, 1989b).

Educational Specifications Process

The Dry Creek School District Facilities Master Plan outlined the needs of the district for additional schools as residential development occurred within the district. It did not specify the design of the facilities or the desired instructional outcomes. Without an analysis of the priorities of Dry Creek School District, the design of the new schools would be in the hands of fate and a few decision-makers. To improve the probability of designing a school facility that would meet the expectations of the students, staff and community, educational specifications were developed prior to the design of the first new school in Dry Creek (Ovard, 1961).

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The process that would be used to develop the educational specifications for Dry Creek School District were consistent with the recommendations of the Western Regional Educational Facilities Laboratory at Stanford University. The steps in the process were:

> Evaluate the existing instructional program in the district,
>
> Examine the best instructional practices in use throughout the state and the nation,
>
> Study trends that may affect future instructional programs and curricula,
>
> Determine the classrooms and facilities needed to teach the instructional program,
>
> Record this information in the form of an educational specifications for school facilities. (Ovard, 1961, p. 1-3)

The development of educational specifications relied on the participation of individuals that had vested interests in the instructional program and the school district. As described in the literature, the composition of Educational Specifications Committee was consistent with such recommendations. The methodology was also consistent with the recommended practices. The participants invited to join the educational specifications process came from the district teaching staff, administration, community and the Board of Trustees. In addition, several members were also invited from the county office of education and the local business community. The process was facilitated by a recognized specialist with a background in curriculum, planning and school facilities (Ovard, 1961).

On January 30, 1989, the formal process to develop the school facility educational specifications of Dry Creek School District began. The process would continue for two additional days. The following account describes the participants, the process and the product.

Description of the Participants

Committee members were selected with the hope of finding a balance between current Dry Creek School personnel and other individuals who would provide additional perspective about instructional programs and design needs. A review of district employees revealed that many of them had gained their entire professional experience at Dry Creek School. Some assumed that the veteran Dry Creek personnel would be limited to examining the needs of the instructional program only within Dry Creek School. To address this concern, each Dry Creek staff member who had no addition experience with other school systems was assigned to work with an educator from outside the district.

In addition to the regular instructional program offered by Dry Creek School District, the Placer County Office of Education supplied several supplemental instructional services. (The additional services were provided because Dry Creek School District had an enrollment of fewer than 1000 students and was considered to be a Direct service school district.) Selected staff from the Placer County Office of Education became a part of the Educational Specifications Committee. The committee also had parent representatives, a member of the Board of Trustees and members of the business community with specialized knowledge in the area of communications and technology (Dry Creek Joint Elementary School District, 1989; Lee, personal communication, January 3, 1989) (see Figure 3).

Description of the Process

The Dry Creek School District superintendent and the facilitator of the educational specifications process decided that it would be most efficient to hold three consecutive days of meetings in order to provide continuity of effort and increase the probability of having all the participants remain through the completion of the process. The meetings would be held away from the normal school setting to reduce the number of interruptions due to work-related issues. Lunch and refreshments would be provided on site to maximize the time on task for the participants. Meetings would begin at 8 a.m. and end at 4 p.m. with half an hour for lunch (Lee, personal communication, January 13, 1989).

The site selected for the meetings was the boardroom of the Roseville High School District because it was large enough to accommodate the committee and within easy driving distance of Dry Creek School District. In addition, Roseville High School District had an interest in the results of the educational specifications process, since it would be responsible for the continuing education of Dry Creek School District students.

On the first day of the committee meetings the facilitator had the members introduce themselves and presented them with an overview of the process. A description of the project time line and the expected outcomes were shared with the participants. The committee members were provided information about the curriculum being taught in the district. The facilitator requested that the committee members analyze the curriculum and determine if there were any omissions or modifications that should be considered for the purpose of the educational specifications process. The committee received additional information about the goals that were expressed by the Board of Trustees for new schools in Dry Creek School District. The goals were drawn from the district mission statement, board policies, the District Facilities Master Plan, the school-level plan and guides from the California State Department of Education.

The participants were next asked to list the instructional programs that should be included in the development of educational specifications for a new school. The list was compiled and reduced to thirty-three individual areas (Dry Creek Joint Elementary School District, 1989) (see Figure 4). Each instructional area was analyzed by at least three members of the committee. The three members discussed their draft analysis and wrote a statement summarizing their findings. Other committee members then evaluated each summary statement, and their comments were returned to the original three committee members for consideration in their final statement. Once the final statement was completed, it was given to the facilitator, who formatted the comments and incorporated them into the district education specifications.

Educational Specification

The desired outcome of this portion of the planning process was the educational specifications. The methodology employed by Dry Creek School District to complete the educational specifications involved the committee members in a systematic evaluation of the educational requirements for an elementary school. The process relied on the use of an instructional program survey, compiled in twelve sections. When completed, the responses formed the basis of the elementary school educational specifications.

The sections reviewed in each program area were:

Introduction: a statement about the instructional program being analyzed

Curriculum to be taught: a description of the curriculum within the particular instructional program

Educational outcomes: a statement about what would be expected from the particular program

Discernible trends: trends that may affect the program

Teaching and learning activities: the activities that would occur in support of the program

Orientation and relationships: the location and relationships of one program to other programs within the school

Internal traffic: the flow of individuals within and around the program area

Furniture and equipment: the furniture and equipment required to appropriately operate the program

Utilities: the utilities needed to support the program area

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> Special requirements: the unique needs and comments that did not fall into any other area
>
> Storage: the requirements of storage space to support each program
>
> Enrollment: the number of individuals expected to be assigned to the program. (Dry Creek Joint Elementary School District, 1989)

Committee members constructed each of the thirty-three program areas through a process of discussion and review with other committee members. The details were reported in each program area and organized into a report that became the text for the educational specifications.

The committee creating the educational specifications for the new elementary school had only their own resources and imaginations as a template for a new school. The existing Dry Creek School was a collection of buildings designed in different periods and added to the school site over 50 years. The curriculum for the new elementary school, which was the basis of the educational specifications, was a projection of the best practices occurring in Dry Creek School District and those thought to have merit in an expanded instructional program.

Examples from each section provide insight about the details and the creativity that were exhibited by the committee members. Each of the twelve sections was completed for the majority of the program areas. The examples listed below are from the adopted educational specifications of Dry Creek School District for elementary schools and occur in the order found in the educational specifications.

Section 1: Introduction

The introduction contained a statement about the program under consideration. The statement described the instructional component and its role in the school program. The introduction to the kindergarten program was a simple description of the students, curriculum and classrooms: "The kindergarten area should consist of two child-centered, self-contained classrooms with self-contained fenced playground. The classrooms will have kindergarten-age children who will have a variety of developmental levels represented" (Dry Creek Joint Elementary School District, 1989, p. 1.1).

The introduction to the library-media program also described the students, curriculum and program that should be considered in support of the instructional program and the design of the facility:

> The library serves the entire student body and staff, providing information and work/study space in all subject areas. Kindergarten through fifth grade levels will be served on a permanent basis and grades 6 through 8 on a temporary basis, using a variety of media types including books, audio cassettes, videos and films, as well as computers. Facilities include the main library, librarian's workroom and a large storage area which houses AV equipment, materials, curriculum and professional library for staff use. The library is intended to be child-centered. (Dry Creek Joint Elementary School District, 1989, p. 9.1)

Section 2: Curriculum To Be Taught

Section 2 described the curriculum that would occur in a program area. The curriculum statements contained specific course content if they related to a grade level or instructional program. Support services programs had less specific references to course content. The statements in the support services programs were generally related to the mission of the school district.

An example of a grade level program with a specific course content was the first grade classroom. The curriculum to be taught in the first grade included language arts, mathematics, science/health, social studies, English, physical education, fine arts and handwriting (Dry Creek Joint Elementary School District, 1989, p. 2.1).

The office-reception area example contained a general curriculum statement. No specific course of instruction was associated with the office area. A short statement described the role of a school administrative office: "The function of the office-reception is as a support service to all programs and operations" (Dry Creek Joint Elementary School District, 1989, p. 18.1).

The conference room was linked to the school office. The role of the conference room was also written as a general statement: "The purpose of this room is to help those who use it share information for decision-making" (Dry Creek Joint Elementary School District, 1989, p. 21.1).

Section 3: Educational Outcomes

The educational outcomes in the educational specifications process described what was to be accomplished in a particular program. Statements from Section 3 defined the results that would be expected from use or participation in the programs that were being described. The descriptions of outcomes for specific grade levels were based on the related course of study. The outcomes for non-instructional areas were stated as desires in support of the instructional program.

The second and third grade educational outcomes were combined as one sub-grouping. The important educational outcomes stated in the educational specifications for second and third grades dealt with meeting instructional objectives and subject matter competency: "At the completion of third grade, students will have met the student learning objectives established by the district curriculum standards and the State Frameworks. The students will achieve competency in (their grade level) subject areas" (Dry Creek Joint Elementary School District, 1989, p. 3.1).

The educational outcomes for a non-instructional area, such as the teachers' workroom, were in support of the instructional program. In the specific program for the teachers' workroom, an additional component also identified an environment designed for adult use: "All materials developed in this room will be created by teachers, teacher aides, and parent volunteers. The materials will be used by students, but students will not have access to this room" (Dry Creek Joint Elementary School District, 1989, p. 22.1).

Section 4: Discernible Trends

Discernible trends affecting the instructional program were described in Section 4. Current district programs and possible trends that may have an impact on them were considered in this section. The instructional programs anticipated the changing requirements and strategies to be taught as a part of the curriculum of a new school. The trends in support programs were related to the evolution of instructional programs.

The fourth and fifth grade program area identified trends for instruction which included team teaching, integrated thematic instructional units, the use of manipulatives in mathematics and science, the mixing of cooperative and individual learning activities, the use of instructional technology and the accommodation of children with a variety of learning needs (Dry Creek Joint Elementary School District, 1989, p. 4.2).

A support service program such as the principal's office is not directly involved in the instructional program of students. The program of the principal's office was to manage the instructional program and assist the classroom teachers. The educational specifications for the principal's office described the trends that would affect the principal in fulfilling his/her responsibilities:

> The principal will become the instructional leader in the school, maximizing the potential for excellence in student learning. The operation of the principal's office will become more business-efficient because of the requirements which will be placed on that individual. This will include serving a changing and diverse student population with a mixed socio-economic background. The school will serve the community for longer hours and more days per year. This increased service may create the need for several administrative personnel to occupy the principal's office. It is predicted that more decision making authority will be shifted from the central district administration to the site level (site-based management). Management of security will become of greater concern and the planning of maintenance and operation will occur around the clock. This will require constant monitoring of energy consumption. (Dry Creek Joint Elementary School District, 1989, p. 19.1)

Section 5: Teaching and Learning Activities

The contents of Section 5 described the various activities that would take place in each program area. The descriptions related the actions of the teacher or other adult and those of the student or learner. Grade level and curricular area descriptions were specific to the instructional programs. Support program descriptions were related to the activities that would be occurring in each area.

An example of the activities described for a grade was the description of the second and third grade classrooms. In this example, the description is divided into two sections. One section described the activities that would be done by the students, while the second section described the activities that would be performed by the teacher:

> Students in these areas will be listening to the teacher give instruction, doing desk work, group work, working in centers and watching visuals. At times individual or small groups will be tutored. They will also put on skits or demonstrations and do special displays. Teachers will be providing classroom instruction, circulating among students, providing individual help, and operating visual aids, including overhead projectors, slide projectors, film projectors and VCR units. Teachers will also be using special displays, maps and writing surfaces. (Dry Creek Joint Elementary School District, 1989, p. 3.2)

The multipurpose room was considered both a support program and a support area. In an elementary school, the multipurpose room is used throughout the day for instructional programs, food service and special programs such as music and drama. During non-school hours, the multipurpose room is also used for a variety of community-based programs. The activities described in the educational specifications for the multipurpose room are summarized below:

> The student will be performing activities related to Physical Education in the multipurpose room. The activities will include basketball, volleyball, tumbling, badminton, dancing and various indoor games. Teachers will use the room for instruction in physical education, drama and music. Other activities that may occur in the multipurpose room are: band concerts, plays, talent shows, meetings, movies, community education, lunches, fund raisers, graduation exercise, and assemblies. In the event of an emergency the multi-purpose room may be used a temporary service area. Two food service programs were identified as a part of the activities that would take place in the multi-purpose room. One program was the school lunch program, which included an area for heating and serving and another for dining. The second program in the multi-purpose room was a convenience kitchen to be used by the community for limited heating and serving of food and refreshments. (Dry Creek Joint Elementary School District, 1989, p. 6.2)

Section 6: Orientation and Relationships

The orientation and relationship each program area has with others was described in this section. The educational specifications identified how each program was related to others in the school. In some situations, unique desires were expressed about locations and relationships of programs and services. An example of a unique requirement would be the proximity of restrooms to certain classrooms. In other programs, general statements were made about the relationship of a program to services, such as "near the parking lot." The comments in this section also became the basis for bubble diagrams found at the end of each program area in the educational specifications.

The resource specialist room comments are examples of statements about an instructional program, describing its orientation and relationships with other programs. The resource specialist program is defined as serving students who have an identified learning handicap and require additional assistance for less than fifty percent of a regular instructional day. The orientation and relationship of the space serving this program include:

> A room with an 8' x 10' connecting resource room/office incorporated into the classroom and it should be near regular education classrooms. (This class should be separate from the other special education room and located near regular classrooms.) It should have direct playground access and be handicapped accessible. As students are constantly coming and going from the class to all other classrooms, accessibility is important. The classroom needs lots of windows for lighting and observation of students on the playground. The office should have separate access. (Dry Creek Joint Elementary School District, 1989, p. 14.2)

The elementary school library-media program is a support service for the instructional program. The library-media center comments also specified specific orientations and relationships on the school site. In the description of the library-media orientation and relationships the educational specifications reinforced the library-media center's role as a student and staff support service by requesting a centrally-located position on the school site:

> The library should be centrally located on the school campus. Nearby areas should include restrooms, computer lab and teachers' workroom (for use of duplicating and copying equipment). The story pit area should be isolated somewhat to allow for quiet, individual study areas elsewhere. A drinking fountain should be located near the check-out area. A workroom should be adjacent to the circulation desk and audio-visual storage/staff library room. Storage area should exit to outdoors to allow easy removal of projectors, etc. to classrooms. (Dry Creek Joint Elementary School District, 1989, p. 9.2)

Section 7: Internal Traffic

This section described the flow of children and adults through and within each program. The flow of students, staff and visitors within the entire campus was included in the overall description of internal traffic. Access and limitations of access to programs and spaces also become important concerns when considering who would use the campus.

The movement of adults and students in the first grade classroom is an example of internal traffic flow in an instructional setting. By describing the flooring materials and their location, the specifications indirectly indicated the type of use and traffic flow that would be anticipated for such spaces in the classroom:

> One exit opens to a common courtyard with a second exit on opposite wall. The area near doors and back of room and sink area are to be vinyl tile and not to be carpeted. Students will move around the room individually and in small groups but will congregate and sit on the carpeted area for some group instruction. (Dry Creek Joint Elementary School District, 1989, p. 2.2)

In contrast, the internal traffic of the elementary school multipurpose room described the usage of a large space. The flexibility of the space was described as the capacity changed from 750 people in a performance, to a basketball court, to a school lunch program for 350 students:

> The main floor will seat at least 750 with reasonable visibility of the stage. The people will be able to move in and out of the facility within five minutes. There should be room for a basketball court when the three-tier bleachers are in place. Classes of students will enter and exit the multipurpose room periodically during the day for instruction.
>
> Some students will buy hot lunches. The students buying hot lunches will need to be served quickly and all students will be bussing their own trays. Students will exit the room when dismissed after lunch. Approximately 350 students will be seated at one time during lunch. (Dry Creek Joint Elementary School District, 1989, p. 6.3)

Section 8: Furniture and Equipment

Section 8 described the various items of furniture and equipment that were determined necessary for each program area. Many of the same items were repeated in the classrooms but the combinations changed with grade levels. In the primary grades, teachers relied more on tables for student work, and in the upper grades the teachers used individual student desks. Specialized items also appeared in each program. For example, the kindergarten program sought tricycles, wagons and scooters for the outdoor play area, while the special day classroom required locking file cabinets, and a movable partition.

Items that were repeated for classrooms and adjusted for size requirements of the students included tackable wall surfaces, tables and chairs for both students and adults, teacher and student desks, map holders and maps, computers for both teachers and students, projector screens, anti-static carpet, running water with soap and towels, file cabinets and a wall-mounted television with a video cassette recorder (Dry Creek Joint Elementary School District, 1989, p. 17.5).

Special furniture and equipment were requested for many of the support programs such as the library and school office. The specifications for the library furniture and equipment called for special items such as microfiche station, anti-theft device for library books, and a card catalog (Dry Creek Joint Elementary School District, 1989). A partial list of items unique to the school office included paper shredder, postage meter, fax machine, safe, dictation machines and staff mail boxes (Dry Creek Joint Elementary School District, 1989). The remaining specialized programs each called for unique furniture and/or equipment items. The information in this section was rich, providing many opportunities for innovation.

The furniture and equipment section of the educational specifications was among the largest section in each program area. In some situations the listing of items were related to specialty areas within the program or by activities that would occur indoors and outdoors.

Section 9: Utilities

Each program required some type of access to the utility systems that supported its operation. The basic utility systems were electricity, water, sewer, telephone, cable television, instructional technology, security and fire alarms. Beyond the basic systems, special requirements were described for children and adults. In the kindergarten classroom, a special note was made to construct the sinks for access by three children at once, and having the faucets operated by foot pedals (Dry Creek Joint Elementary School District, 1989). In the computer room, the specifications called for electrical power surge protection and additional electric outlets (Dry Creek Joint Elementary School District, 1989). In the library, additional computer network outlets were requested for student computer work stations, and additional wiring for six video cassette recorders and optical disc machines (Dry Creek Joint Elementary School District, 1989).

Many of the requests placed in the utilities section were non-technical and would need further clarification in the design process.

Section 10: Special Requirements

The statements in the Special Requirements section contained directions and comments to the design team that were not applicable to other sections. The comments provided more specific details about the items listed in other sections of the program area. Some comments listed in this section would be repeated in other program areas. Other comments would be unique to a specific program. Special requirements in the kindergarten classroom, for example, included the entrance locations and the fire and security system. Without this direction, the architects and design committee may have missed the subtle needs of the kindergarten staff:

> Two outside entrances/exits on opposite sides of the classroom with foresight of design concerning safety of 9 (passing children on the outside). . . . The security alarm system should be chosen with consideration. A motion-sensitive system is not desirable since pets may be left overnight, and objects (displays) may also hang from the classroom ceiling. (Dry Creek Joint Elementary School District, 1989, p. 2.4)

Other examples of special requirements include comments about sound-proofing the speech and language room (Dry Creek Joint Elementary School District, 1989), voice mail for the school office (Dry Creek Joint Elementary School District, 1989), a speaker phone and comfortable furniture in the conference room (Dry Creek Joint Elementary

School District, 1989), and special exterior lighting in the pick-up and drop-off area of the day-care facility (Dry Creek Joint Elementary School District, 1989).

Section 11: Storage

The curriculum of the new elementary school would be rich in instructional programs and activities. To conduct the anticipated educational program in an efficient manner, teachers and staff felt on-site storage was a priority.

> Counter tops under large windows with adjustable storage shelves beneath, 32 student cubbies, and a walk in closet (nine feet by 8 feet) with floor the ceiling shelves, chart drawers, sink and counter top with over head and under counter cabinets (are needed). (Dry Creek Joint Elementary School District, 1989, p. 2.5)

Additional significance was place on the need for staff storage because Dry Creek School District was considering the option of implementing a multi-track year-round calendar. If a multi-track, year-round calendar were implemented, storage would need to be provided for student and staff materials during those periods when they are not on campus and other students and staff may be using their classrooms. Storage space should be planned for year-round storage which would include portable cabinets (Dry Creek Joint Elementary School District, 1989).

In addition to the storage requirements for instructional programs, the storage space for the school custodian was an important consideration. In fact, storage requirements comprised the majority of the custodial program description. The custodial storage was designed to hold supplies for the school as well as supplies for the cleaning and light maintenance of the school.

The storage room had special requirements to accommodate its role on the school site. The custodial area requirements were:

> A building twenty feet by twenty feet, an eight-foot roll-up door, 600 linear feet of adjustable storage shelving, access to the main roadway, overhead fluorescent lighting, power supplied every eight feet on each wall, a concert slab floor, fire sprinkler, security alarm, climate-controlled environment and a manually-controlled ventilator fan. (Dry Creek Joint Elementary School District, 1989, p. 27.1)

Section 12: Enrollment

The enrollment section of the educational specifications described the number of students that would be served by each program area and the entire school facility. The information restated the adopted loadings that were listed in the Facilities Master Plan.

The drafting of the elementary school educational specifications was completed on February 1, 1989. A proof copy of the educational specifications included the addition of bubble diagrams describing the spatial relationships of the various program elements reviewed with the project architect on February 15, 1989 (Dry Creek Joint Elementary School District, 1989). Comments and clarifications were added to the draft educational specifications, and the final draft was reviewed by the district, the process facilitator and the project architect on March 7, 1989. On March 9, 1989, the Dry Creek Joint Elementary School District Board of Trustees adopted the elementary school educational specifications and directed the superintendent to begin the design of Heritage Oak Elementary School. (Dry Creek Joint Elementary School District, 1989)

Summary of the Educational Specifications Process

The process used by Dry Creek School District to build its first school in more than 100 years began ith the development of educational specifications. The educational specifications were based on the curriculum that would be taught in the newly constructed school. A consultant skilled in school facility planning coordinated the process. The educational specifications committee was composed of stakeholders in the school district, educators from surrounding school districts and the County Office of Education. The process used to develop the educational specifications relied on the skills of the committee members, the district curriculum, successful instructional practices and the anticipated needs of the students, staff and community that would be served by the new school. The completed educational specifications were adopted by the Board of Trustees and became the standard for designing Heritage Oak Elementary School. The investment made by Dry Creek School District in the preparation of a detailed educational specifications document was responsible for the design that would eventually win the international recognition.

Designing Heritage Oak Elementary School

The approval of the educational specifications by the Board of Trustees allowed the district administration and its architect to begin the final design of Heritage Oak Elementary School. After the March 9, 1989, board meeting, the adopted educational specifications were provided to the architectural firm for their review in preparation for the design process. On March 20, 1989, the architects and district staff met to determine

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two important issues: enrollment at the elementary school and the process that would be used to design it.

Heritage Oak Elementary School was planned in accordance with the Facilities Master Plan. It would hold 600 K-5 students with the option of housing additional students for an interim period. This decision was important because it determined the total square footage eligible under the California State School Building Program to build Heritage Oak School (41,604 square feet) (California Department of Education, 1991). The number of students enrolled in the K-5 school also determined the acreage that would be authorized for purchase and development of a school site (10 acres) (California Department of Education, 1991). The basis for the design process would be the educational specifications adopted by the district. The design process was also impacted by the need to house students. Enrollments in the district were growing at a rapid rate. In the 1986/87 school year Dry Creek District had 240 students, but by 1988/89 the number had grown to 432 students, and conservative projections for the 1991/92 school year forecast more than 1200 students (Office of Local Assistance, 1989). The only option to house and educate these students during the design and construction phases of the new school (estimated to be 1992) was continued use of the original Dry Creek School.

Charette Process

To reduce the time required to design Heritage Oak School and to maintain the requirements of the educational specifications, the architect and district superintendent chose a process that would bring together selected members of the educational specifications committee and representatives of the architectural firm in an intense three-day design workshop. The intense multi-disciplinary process is known as a charette (Gove, 1986). The three-day charette would be spread over one week with a goal of designing a school facility on the 18-acre school/park site.

The charette was conducted on April 21, 24 and 27, 1989, at the meeting room of the Roseville High School District Office, the same location used to complete the elementary school educational specifications (Dry Creek Joint Elementary School District, 1989). The district-adopted educational specifications were the basis for the design process, but could be amended as necessary to meet the constraints of authorized building size, budget and program requirements.

The first day of the charette, the architectural staff and the district personnel were given an overview of the process that would be undertaken during the following several days. The combined school and park sites were reviewed and the general layout of the school and park portions were discussed. The location of the heritage oak tree that was the namesake of the school was identified as the focal point of the campus and the park. The priorities listed in the educational specifications were reviewed and listed on large sheets of paper to serve as guides in the design process. Five significant design elements were considered at the first meeting: (a) The kindergarten was separated from the other academic classrooms, (b) the multipurpose room and administration buildings were placed near the parking lot, (c) classrooms were clustered to plan for a multi-track, year-round schedule (three classrooms in use with a fourth classroom out of session), (d) work and storage space would be related to the classrooms, and (e) there would be direct or visual access to a courtyard or garden area. The discussions about the classroom/

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workroom configurations and courtyards resulted in a configuration that resembled a butterfly.

On the second day of the charette, the architectural staff presented a series of options to the design committee that refined and defined the information from the first session. The parking lot for the school site was planned in an "L" shape, with the kindergarten and day care facility located on the short leg of the L, the multi-purpose room on the long side of the L and the administration building on the top of the L. The library was located in the center of the school site and the outdoor platform amphitheater and courtyard were located near the heritage oak tree.

The design committee reviewed the options of the classroom configurations that were based on the "butterfly" design. The consensus of the design committee was to arrange the classrooms in a series of C-shaped buildings. Eighteen classrooms were configured with twelve in one cluster and six in another. The 12 classrooms were in two C-shaped buildings containing six classrooms. The two C-shaped buildings were placed with one reversed and the long side of each placed against the another. The new configuration resembled an "H" shape. The remaining six classrooms were portable buildings as required by California state law. The six portable classrooms were placed in a "C" configuration around a courtyard.

The architectural staff also presented alternatives to house the new students whose enrollments were overcrowding Dry Creek School. The Heritage Oak facility was designed to house 600 students, but continuous rapid growth required a modification in the capacity. The consideration of a multi-track, year-round calendar would allow the facility to accommodate approximately 750 students. The need to immediately house the growing enrollment in the district also required that Heritage Oak School provide for interim facilities within a year. To meet the need for additional classrooms, the architects and committee designed the Heritage Oak School site to accept eight additional state-owned portable classrooms.

The eight state-owned portable classrooms and the six portable classrooms designed through the charette process would become the core of a "starter school" which would open temporarily and house students as the remainder of the Heritage Oak School facilities were being constructed. The starter school would operate on a traditional calendar and house more than 500 K-5 students.

The charette process proposed the locations of the state-owned classrooms, along with the placement of additional temporary facilities for administration, library, meeting space and childcare. The locations of play fields, hard courts and temporary parking were also discussed.

On the third and last day of the charette, the architectural team returned with several final proposals for the design team to evaluate. They included the arrangement of the buildings on the school site, the park/school boundary, the play field and hard court programs and the starter school configuration. The architectural staff also provided enlarged diagrams of the major buildings. The last day of the charette was used to fine-tune the site and facility relationships and to determine the final arrangements of doors, windows, counters, sinks, walkways, restrooms and other items that required design team comments. The final step in the process was to review the list of design elements that were stated at the first meeting and, calculating the square footage of the school facilities, thereby maintain funding eligibility in the State School Building Program.

The completion of the charette provided the participants with a schematic design of Heritage Oak School that would be refined into the construction drawings. (Note: the description of the Heritage Oak Elementary School charette process was taken from the transcript of a videotape made at the time of the charette, April 27, 1989).

Description of the Participants

The participants in the design charette were divided into two groups. One group represented the interest of the architectural firm designing the school; the other group represented the interests of the Dry Creek School District. The members of the architectural staff included the principal of the firm and charette leader Gordon King, considered an expert in both public school architectural programming and California school facilities regulations. Gordon King is also a Fellow of the American Institute of Architecture. The other members of the architectural team were the project manager, the chief designer and her assistant designer.

The school district team included a subcommittee of the educational specifications committee. The members were selected for the experience and background they would bring to the design process. The school district was represented by the head custodian, a kindergarten teacher, a primary grade teacher, a middle grade teacher, an upper elementary grade teacher, a special education teacher, a computer teacher and the district superintendent (Dry Creek Joint Elementary School District, 1989).

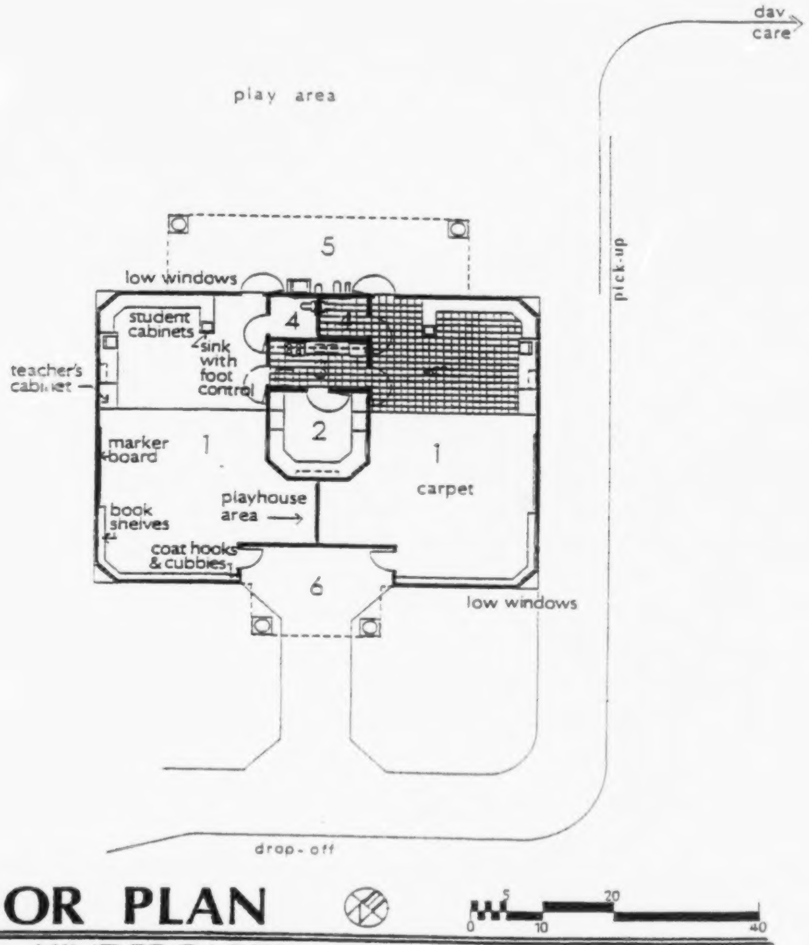
Others that would be involved in later stages of the design process were the Roseville director of parks and recreation, the director of the city child care program, the risk manager for Dry Creek School District's insurance carrier and a member of the city police department Community Services Division.

Design of the Heritage Oak Elementary School

The design of Heritage Oak Elementary School continued to evolve from the initial designs of the charette process. Over the next several months the architects and the design committee refined the designs of the buildings, their locations on the school site and the amount of space allocated for the instructional programs. On July 7,1989, the "starter school" design was presented to the district for approval. The design was accepted and the starter school was included as a part of the entire campus. The preliminary design of Heritage Oak School was also shared with the president of the major residential development that surrounds the Heritage Oak School and park site. Approvals for the final design were received by the Roseville Park and Recreation District, the Dry Creek School District design team and the District Board of Trustees (Dry Creek Joint Elementary School District, 1989).

The following is a description of selected portions of the final Heritage Oak School design. The elements that are described will trace their inclusion from design to the instruction program.

Kindergarten Room



FLOOR PLAN

UNIT A - KINDERGARTEN BLDG.

PROGRAM KEY

1. Classroom
2. Teacher's Workroom/Y.R.E. Storage
3. Kitchen
4. Restroom
5. All Weather Teaching Station with Clay Sink
6. Covered Entry

Figure 5. Floor Plan: Kindergarten Building

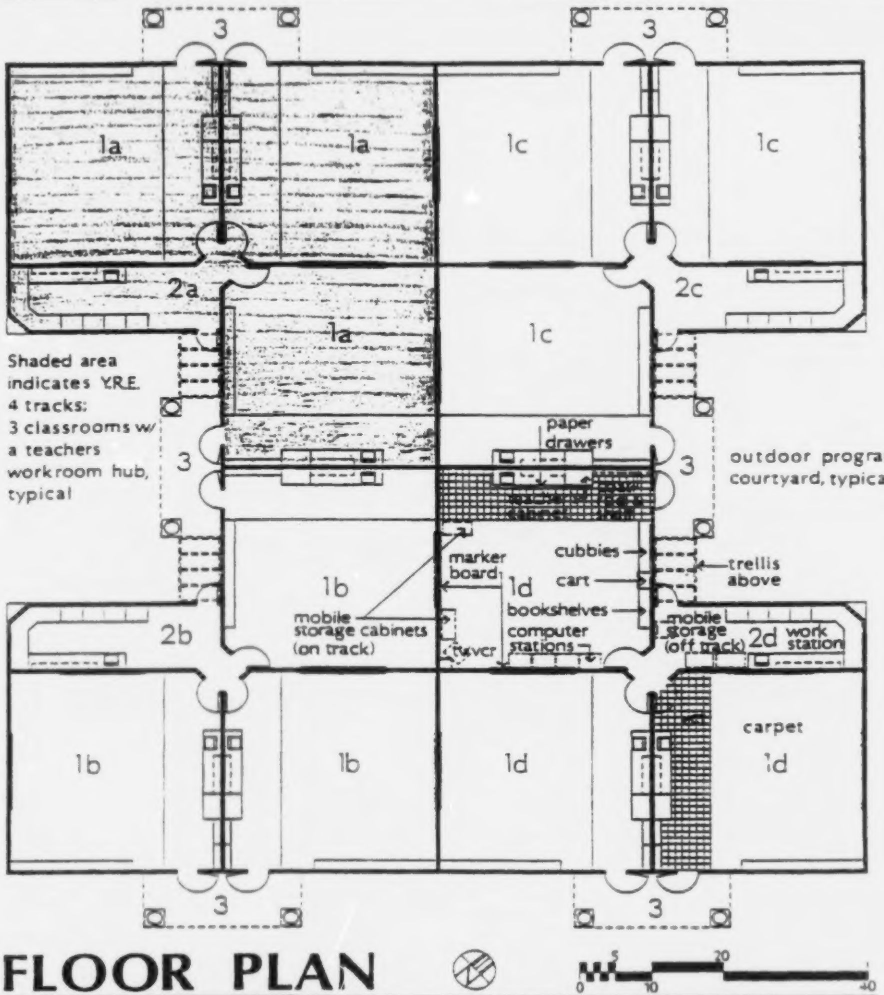
The instructional components of the kindergarten curriculum influenced the design and location of the kindergarten classroom (see Figure 5). The basic curriculum contained language, mathematics, music, science, physical education, art and free activities. The educational outcomes from the kindergarten program were identified as following simple rules, auditory and visual discrimination, familiarity with different types of literature, leaning basic mathematical concepts, developing a curiosity for learning and developing social interaction skills. The kindergarten curriculum emphasized the use of manipulatives (Dry Creek Joint Elementary School District, 1989).

The design of the kindergarten classroom incorporated many of the elements described in the educational specification as necessary to meet the instructional requirements of the kindergarten curriculum. They included two child-centered, self-contained classrooms that were connected by a teacher workroom large enough to be shared by four teachers. The teacher workroom also contained individual teacher storage space for possible use during year-round program off-track periods. Each workroom contained the requested counter space, sink, computer connection, telephone and desk space. The workroom was accessible from each classroom and windows were placed in each wall to provide visual supervision of both classrooms from the teacher workroom. An apartment-size kitchenette with a stove, refrigerator and sink at adult level was designed into the teacher workroom area for storage of student snacks and preparation of some classroom projects. A separate fenced playground and courtyard were designed to provide secure play areas for the kindergarten students, and student restrooms were placed within each classroom. Student pick-up and drop-off areas were placed near the entrance of the classroom complex and the fenced playground to provide alternatives for students who arrive and depart during the mid-day change in kindergarten classes. (California provides 180 minutes of classroom instruction for students enrolled in kindergarten. This generally means that two separate classes of kindergarten students will occupy the same classroom, morning and afternoon.)

The kindergarten classroom also contained many of the requested instructional support elements, such as dry-erase white boards, tackable walls, a housekeeping or playhouse area, a library nook with built-in book shelves, a student-level sink with foot-operated water controls, storage areas with counter space, shelves and drawers, student coat cubicles with four cubbies, and enough program space for a variety of instructional programs and student furniture (Dry Creek Joint Elementary School District, 1989) (see Figure 5).

Standard Classrooms, Grades 1-5

The classrooms that would be used to educate students in grades one through five were designed to be similar to each other because a multi-track, year-round schedule may require rotations by a team of teachers into several classrooms during one school year (see Figure 6). When fully implemented, a multi-track, year-round schedule will require four teachers to share three classrooms. In assigning teachers to groups of four, there may be a variety of grade levels in each team, and they will all use each of the three classrooms. The design team decided that rotations of teachers between classrooms would require classrooms with similar features.



Shaded area indicates Y.R.E. 4 tracks: 3 classrooms w/ a teachers workroom hub, typical

outdoor program courtyard, typical

FLOOR PLAN

UNIT D - CLASSROOM/WORKROOM BLDG.

PROGRAM KEY

1. Classroom
2. Teacher's Workroom/Y.R.E. Storage
3. Covered Entry

Figure 6. Floor Plan: Classroom/Workroom Building

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The instructional components of the standard elementary classrooms for grades one through five are similar. The curriculum includes language arts, mathematics, science, physical education, fine arts and handwriting. Trends considered in the design requirements of the classrooms were (a) inclusion of special needs students, (b) use of instructional technology, (c) integrated thematic curriculum design, (d) literature-based reading programs, (e) cooperative learning, (f) dramatic arts in the classroom, (g) use of manipulatives in teaching mathematics, and (h) team teaching (Dry Creek Joint Elementary School District, 1989).

Classroom activities were described by the district staff as a combination of individual and group work. Students would work at individual desks, small groups and in whole class projects. Additional activities would include learning centers, individual and small group tutoring, skits, demonstrations and displays of student work and special projects. The teachers would be circulating within the classrooms, operating instructional technology and employing visual aids (Dry Creek Joint Elementary School District, 1989).

The classrooms should be related to restrooms, the playground, the multipurpose building and the school office. Classrooms were requested to be arranged in clusters creating a patio area, with nearby areas for gardening and picnicking (Dry Creek Joint Elementary School District, 1989).

Students would have direct access to the patio (courtyard). Vinyl tile should be placed in the activity areas where water and other wet activities may occur. The carpeted areas would be used in the remainder of the classroom to foster individual and group activities (Dry Creek Joint Elementary School District, 1989).

The classroom design that resulted from the educational specifications provided options to achieve many of the desired program requirements. The most obvious was the clustering of the classrooms. In the permanent classroom facility, four groups of three classrooms were joined together under one roof (see Figure 6, 1a & 1b & 1c & 1d). A teacher workroom and storage area was integrated into the design of each three-room cluster. The addition of the workrooms met the desire of the teachers to have classroom storage and work space for off-track, year-round students and teachers (Dry Creek Joint Elementary School District, 1989). Each workroom contained the requested counter space, sink, computer connection, telephone, desk space, individual teacher storage and off-track teacher and student storage. The workroom was accessible from each classroom and a separate door was designed to provide exterior workroom access (see Figure 6, 2a & 2b & 2c & 2d).

The standard classrooms were designed to meet the instructional program requirements of the elementary school curriculum. The size of each classroom equaled the California standard of 980 square feet. The floor was divided into a carpeted area for seat and group work and an area with vinyl tile for heavy traffic and activities that require water. The room contained counters, cabinets, bookshelves, a portable cabinet and 32 cubbies for student work. Other desired items included computer stations, white dry-erase boards, televisions and videocassette recorders, tackable walls and projection screens. Utility connections in the classrooms brought cable television, telephone/intercom, intrusion alarm, computer networking, individual room thermostatic control, and multiple electrical outlets for both standard equipment as well as dedicated circuits for computer

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connections. Each cluster also had one classroom that opened directly onto a patio, while the others opened on to a turf-covered area (see Figure 6).

Multipurpose Building

As the name implies, the multipurpose building at Heritage Oak Elementary School was designed to meet various instructional and programmatic needs (see Figure 7). The activities planned for the facility included the preparation, serving and consumption of student meals, student assemblies, school productions of plays and concerts, and physical education classes. Also considered in the design of the facility were possible community uses by such organizations as the PTA, youth groups and the city recreation programs (Dry Creek Joint Elementary School District, 1989).

The desired outcomes from the facility were classified into three areas. The first outcome was the student program, the second outcome was the required food service program and the third was community use. The desired student outcome for the multipurpose building would be centered on performance opportunities. Student performances would be in the areas of physical education (i.e. dance, court sports, exercise), performing arts (i.e. band, choir, drama) and large group instruction (i.e. assemblies, rallies, special presentations) (Dry Creek Joint Elementary School District, 1989).

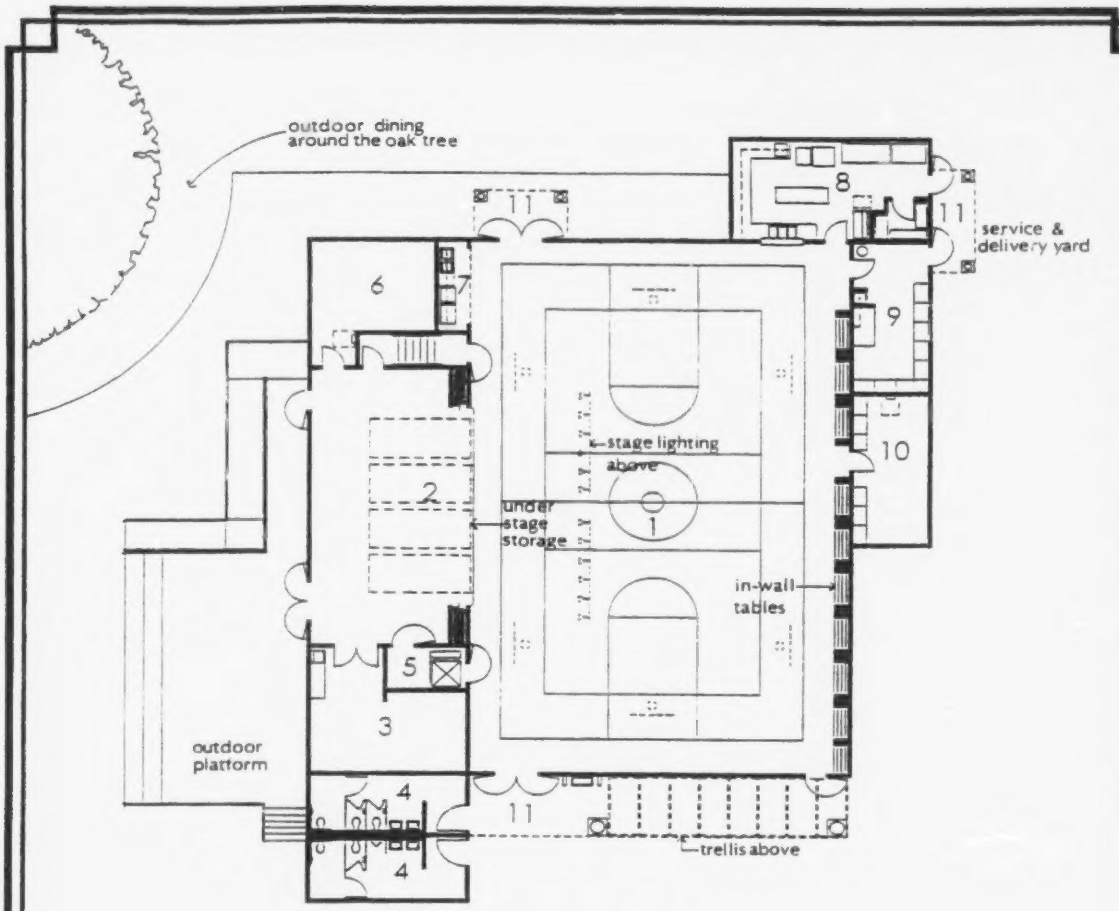
Serving meals to students is a requirement of law and the multipurpose building was the center of the student lunch program. The Dry Creek School District contracts its food service from an outside vendor. The required kitchen space for the student lunch program was designed to provide some limited preparation of food and storage, with the majority of meal preparation conducted by the contractor and transported to the school for final warming or garnishing prior to serving. The use of the food preparation area by community members would be restricted during non-school hours. Concerns about health regulations and inventory required the presence of a food service employee whenever the area was in use. The majority of the food service space was dedicated to seating for the student body of the school during meals. The location and service access of the multipurpose building were priorities of the district staff (Dry Creek Joint Elementary School District, 1989).

Community use of the multipurpose building was the third outcome considered in the design of the facility. The district board of trustees hoped to duplicate the strong sense community found at the Dry Creek School in each of its new schools. The multipurpose building would be required to provide a "common space" that would invite use by parents and community members. The activities anticipated for the multipurpose building included PTA meetings, youth group meetings, service club functions, recreational programs for both children and adults, neighborhood meetings, interim church facilities and shelter in emergencies. The majority of activities that would be conducted by the community were anticipated to occur during non-school hours and on weekends (Dry Creek Joint Elementary School District, 1989).

The proposed location of the multipurpose building on the school site would be away from classrooms, and near a vehicle access area for outside deliveries. The facility was designed to relate to the school parking lot, an outdoor amphitheater and the student quad. The interior of the multipurpose building would provide opportunities to use the performance stage and storage beneath the stage floor, an amphitheater stage adjacent to the indoor stage, storage for musical instruments and sheet music, and a convenience kitchen for community use (Dry Creek Joint Elementary School District, 1989).

The multipurpose building designed for Heritage Oak School contained many of the desired elements described in the educational specifications. The facility was a separate building located on the campus near the school parking lot, with direct delivery access to the kitchen area (see Figure 7, 11). An outdoor amphitheater and student quad were constructed next to the multipurpose building and opposite the indoor stage (see Figure 7, 2). The heritage blue oak on the school site (namesake of the school) stood adjacent to the amphitheater, providing a dramatic frame to the space and in the late afternoon, the ancient oak shaded the student quad and amphitheater. The main entrance of the multipurpose building was located near the front of the school and with a line of sight to the school office. Other access points to the multipurpose building were designed to provide ease of use by students and staff (see Figure 7, 11). The rear access doors opened onto the outdoor stage. A set of double doors was located to facilitate easy movement of large equipment between the inside and outside of the building. The second rear door was designed to allow student access during performances on the indoor stage. The backstage student entrance was requested by the teachers to increase the efficiency of performances involving large numbers of students (see Figure 7, 2). Student restrooms were located near the main entrance of the multipurpose building (see Figure 7, 4).

The interior of the multipurpose building was designed to incorporate the majority of the desired instructional and community elements. The main floor of the multipurpose building was designed to accommodate a middle school-size basketball court with limited sideline seating. The floor of the main room also contained fixtures to accept a regulation volleyball net and court. Two additional basketball hoops and backboards were located



FLOOR PLAN

UNIT B - MULTIPURPOSE BLDG.

PROGRAM KEY

1. Multipurpose Room
2. Stage
3. Drama Storage
4. Restroom
5. Handicap Lift
6. Music Storage
7. Convenience Kitchen
8. Serving Kitchen
9. Custodial Receiving
10. Multipurpose Storage
11. Covered Entry

on each side wall of the main room, creating a total of six locations within the main room with basketball hoops. All side wall backboards were installed with electric motors that would retract and lower them as needed (see Figure 7).

The main room of the multipurpose building also opened onto a stage area. The stage was located on one of the longest walls to improve the sight lines of the audience. The stage was built above the main floor, which allowed for folding chair storage beneath the stage floor. The stage area could be separated from the main room by two systems. The simplest was the use of a curtain drawn across the opening. The other means was through the use of a fireproof partition, which folded into the wings of the stage and was electrically operated. This fixture could be locked closed, creating a separate learning area on the stage. The stage area also contained overhead theatrical lighting, an integrated sound system, and full curtains (see Figure 7, 2). On each side of the stage a room was constructed to store musical instruments and stage properties (see Figure 7, 3 & 6). An electrically operated projection screen could be lowered from the ceiling into an area in front of the center stage.

The food services area was located on the wall opposite the main entrance. This provided an area for dry goods storage, refrigerated storage, heating and preparation of food, washing and storage of utensils and a serving area. The food services area had direct access to both the interior and exterior of the facility, and was provided with both phone and computer access (see Figure 7, 8).

Community and staff members who required a food preparation area were provided an alternative to the food services area. A convenience kitchen was built into the wall of the multipurpose building. Secured behind a rolling door, the convenience kitchen had a built-in electric range, oven and microwave oven. A refrigerator, sink counter and cabinets were also placed in this space. The convenience kitchen was located across from the service entrance of the multipurpose building and adjacent to an exterior double door, facilitating its use (see Figure 7, 7).

Storage for the multipurpose building was built into several spaces. As mentioned earlier, there was space designed under the stage for folding chairs (see Figure 7, 2). In addition, the multipurpose building had a walk-in room for supplies and equipment (see Figure 7,10). A second separate space was also located next to the food services area for the head custodian (see Figure 7, 9). The head custodian space contained a small office area with telephone, computer connections, chemical supplies and tools used in the maintenance and operation of the school. The tables used by the food services program were folded and stored in the walls of the multipurpose building opposite the stage (see Figure 7).

The multipurpose building at Heritage Oak School is one of the most heavily used facilities in the area. It is booked for instructional programs and assemblies by the teaching staff throughout the week. At least once each month an evening program has been presented to the parents of Heritage Oak students. The Roseville Recreation Department has the room booked at least two week nights each week. The multipurpose building has also been reserved by the Boy and Girl Scouts, 4-H, Little League, Bobby Socks, and Youth Soccer. Each Sunday the multipurpose building is home to several local churches. The desire of the trustees for a school and community use facility has been realized in the design and construction of the multipurpose building.

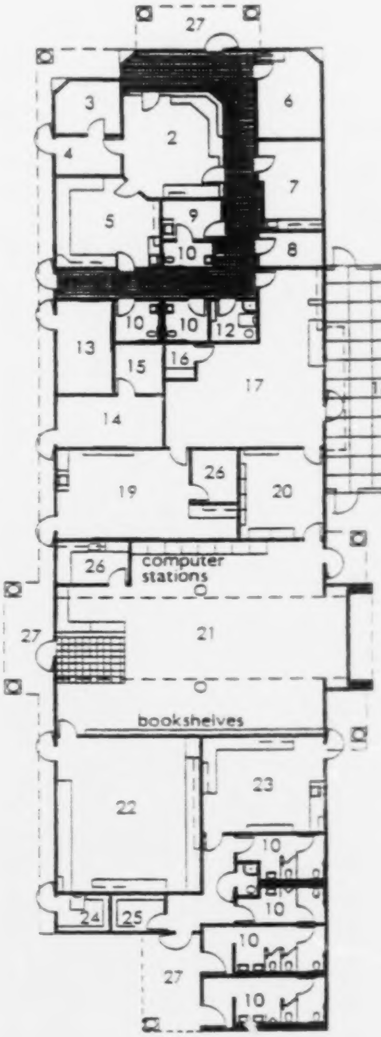
Administration/Library Building

The administration/library building represented a design that met several instructional and support program requirements within one facility (see Figure 8). The building was designed to house the school office, site administrators, conference room, special education services, library, computer laboratory, staff workrooms, teachers lounge and restrooms. Combining the administration and library functions in one building was the result of a decision to gain program space (square footage) in the remainder of the school by designing efficiencies in the facility floor plan. The Dry Creek School District educational specifications identified the needs of each program, and the specifications were used to design and locate each of the areas. The following description provides the highlights of each area within the administration/library building.

Office-reception area. The administrative suite served as the main reception area for visitors and is the first impression of the school seen by a parent, community member or visitor. The school office must be attractive and functional, should communicate the high professional standards of the school. The school office was designed to support the instructional program and to efficiently conduct the business of the school. Security and confidentiality of student information was an important recommendation in the educational specifications. The principal's and vice principal's offices were included in the design of the school administrative space. The reception space was located near the school secretary space, with visual supervision of the office entrance and parking lot. The flow of people in the school office was directed by natural boundaries established through the use of carpets, lights and color. A conference room was located near the reception area. The office space would require enough space for three clerical employees, 12 to 15

PROGRAM KEY

1. Lobby
2. Clerical
3. Vice Principal
4. Student Entrance
5. Clerical Workroom
6. Conference
7. Principal
8. Communications and Data
9. Sick Room
10. Restroom
11. Staff Entrance
12. Custodian
13. Speech
14. Staff Conference
15. Nurse/Psychologist
16. Staff Telephone/Conference
17. Teacher's Lounge
18. Teacher's Patio
19. Resource Specialist
20. Audio Visual Professional Library
21. Library - Media Center
22. Computer Lab
23. Teacher's Workroom
24. Art Storage
25. Science Storage
26. Office
27. Covered Entry



FLOOR PLAN

UNIT C-ADMINISTRATION/LIBRARY BLDG.

Figure 8. Floor Plan: Administration/Library Building

people in the reception area with seating for 6 adults and counter space for 10 people. In addition to the standard school office equipment, accommodations were required for computers, central public address system, postage machines, fax machine and photocopy machines. The requested storage for the office consisted of closets, cabinets and a walk-in fireproof vault (Dry Creek Joint Elementary School District, 1989).

Principal's and assistant principal's offices. The educational specification for the principal's and assistant principal's office was written for efficiency and comfort. The offices of the site administrators should present a friendly and professional atmosphere. The space was designed for small group conferences (up to 6 people) with either adults or students. Security and confidentiality were important requirements in the office design. The educational specifications cited the trend of site-based management as a program requirement that would increase the decision-making authority of the site administrators. To aid the site administrators in this task, their office space would require access to computer networks, planning tools, reference materials and conference space. The orientation of the site administrators' office space would require free circulation within the school office, direct access by the school secretary, and indirect access by student, parents and staff (Dry Creek Joint Elementary School District, 1989).

Conference room. The conference room in the administrative office area was designed to provide a space where professionals could met and discuss educational philosophies, gather information and plan educational programs. The room was large enough to house up to 12 people, was easily accessible to the site administration and had windows along one wall. The conference room was equipped with a large table and comfortable chairs, storage, white boards, tack boards, cable access television, computer network outlets, a sink with hot and cold water, adequate electrical outlets and adjustable lighting. Special considerations were requested for security, video teleconferencing and soundproofing (Dry Creek Joint Elementary School District, 1989).

The final design for the administrative portion of the office/library facility fulfilled many of the requirements detailed in the educational specifications (see Figure 8). Access to the school office was designed to separate the students, staff and community during the normal hours of operation. Each had a unique point of entry. The community entered from the parking lot through the main entrance (see Figure 8, 1). Students were directed through a second doorway near the assistant principal's office and school clerks' areas (see Figure 8, 4). Staff members had a separate, marked door with direct access to the adult restrooms and staff room (see Figure 8, 11).

Parents, community members and other visitors would be greeted by the clerical staff of the school office as they entered the lobby. They would be served by the staff, and if additional contact with school staff was necessary, guests would be directed to the conference room, chairs in the lobby or escorted to the appropriate employee.

The conference room was placed with direct access to the school office lobby (see Figure 8, 6). The location was selected to reduce crowding that may occur when a number of individuals were attending a meeting. Rather than waiting in the lobby area, guests would be requested to enter the conference room. The conference room contained a large meeting table, enough chairs for ten people, white board, tackable walls, sink with hot and cold water, cabinet storage, telephone with speaker phone, outlets for cable television, computer network and electricity. A corner window admitted natural light. The conference room was double-sound insulated during construction to provide security.

The site administrators (principal and assistant principal) had offices designed with many similar features. These included direct access to the school clerical support, computer network access, tackable walls, telephones with speaker phones, cable television access, and sound proofing. The assistant principal had a doorway for direct student access and a small reception area (see Figure 8, 3 & 4) These features were designed to provide a convenient method for student contact by the assistant principal. The principal had a slightly larger office and a small sink with hot and cold water. The principal's office was designed to accommodate the small group meetings that would be held in that space (see Figure 8, 7).

The clerical support area was designed to accommodate between two and three full-time employees. One of the employees was designated as the school secretary and the other positions were designated as school clerks. The office space for the clerical support was designed with three unique environments. The first was the general work area (see Figure 8, 2). The space includes the desks, telephones, networked computers, fax machine, site and transportation radio communications, and file storage. Special design features in the office include a portion of the counter space that was lowered for small children, special computer system for attendance, cable television connection and floor-mounted utility connections.

The general work area was designed to be supported by a dedicated staff workroom. The workroom design included space for the office staff to duplicate and assemble materials, receive and store supplies, and serve as a temporary clerk work station. The workroom contained telephones, computer connections, paper and supply storage, special electrical outlets designed for photocopy machines and file storage. Access to the workroom was through a door opening directly to the general work area, along with a second door opening from the staff hallway (see Figure 8, 5).

The third area designed to support the clerical staff was the sickroom. The sickroom was required because the Dry Creek School District provides itinerant nursing support. Students who became ill during the course of a school day, or who required minor medical attention, were treated by the clerical staff. The space designed for such events was place directly next to the clerical general work area. Direct supervision by the clerical staff of the individuals served within sick room was accomplished with the installation of a sliding glass window. The window allowed visual supervision of the students who were ill (see Figure 8, 9). The sick room also had a handicapped-accessible restroom (see Figure 8, 10).

Completing the administrative area was a space designated for communications and data. The space was designed to hold the school intercom/telephone system, network data controls, cable television connections, intrusion alarm system and fire alarm controls. The room had a security lock, and controlled access (see Figure 8, 8).

The entire administrative area could be secured by closing and locking the exterior office doors, and the two doors that access the staff room hallway. The door that accesses the administrative office was designed with a 48-inch opening. The width of the opening allows two adults to pass through the doorway together. The 48-inch door was designed to be held open during school hours for easy circulation between the staff room and the school office. The school office was design to be secured while allowing staff and community access to the staff room and staff restrooms.

Teachers' lounge. The educational specifications for the staff lounge called for a space that would be used to eat, relax, meet and work in a comfortable, stress-reducing environment. The space was designated to hold 35 adults. Messages, telephone calls and mail would be distributed in the lounge. The desired location of the staff lounge was near the teachers' work room, library and school office. The educational specifications also called for the teachers' lounge to open onto a patio. The special equipment required in the lounge consisted of a microwave oven, stove, conventional oven, two refrigerators, dry erase board, vending machines, telephone booth, built-in dishwasher, and cable television (Dry Creek Joint Elementary School District, 1989).

The final design for the teachers' lounge was crafted to provide a relaxed environment for the certificated staff. No accommodations were provided for photocopy machines, work stations or mail boxes. The intent was to provide a space that would allow gathering of the staff around food, beverages and in some cases, cooked entrees. A space was also provided for vending machines, built-in stove, oven, microwave and dishwasher. A counter with sink and cabinets provided preparation surface for staff meals and snacks. The room also had one area with vinyl tile flooring and another location with carpeting. As with the instructional rooms, the vinyl tile area was provided for wet areas, while the carpeting was for seating and meetings. The exterior wall had a floor-to-ceiling window area that opened onto an enclosed patio (see Figure 8, 18). Walls were tackable, with one large dry-erase board. A private telephone booth was design into the lounge (see Figure 4). A professional library for resource materials and video equipment was designed next to the teachers' lounge. Special cable access was designed into this space to allow the broadcast of in-school television programs (see Figure 8, 20).

Special education services. Special education services required in an elementary school setting were considered in the educational specifications. The programs considered for their impact on the elementary school curriculum were resource specialist program (RSP), special day classes (SDC), severely handicapped program (SH), and designated instructional services (DIS).

Resource specialist program. The resource specialist program was identified as a support for the regular education teachers. Students that were identified for RSP were seen in groups of 2-15 students. Multiple subjects were covered simultaneously. Students from all grade levels would be served in a special classroom. In addition to the instructional program offered in RSP, students would be evaluated for progress toward meeting their educational plan objectives. The methods that would be used to instruct the students included direct instruction, supplemental instruction of selected subjects and tutoring in regular classroom assignments. An instructional assistant and teacher were planned as the professional staff that would be assigned to the RSP classroom. RSP was expected to have students for a limited period of time, and the desire was to transition them into full-time regular classroom instruction. The trend in RSP was to have the resource teacher work with classroom teachers in modifying the assignments and

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instructional programs to accommodate the needs of the identified students. The activities that were identified as part of the RSP program included computer assisted instruction, individual and small group instruction, individual testing, consulting with teachers and other interested parties about individual students, observations of students, writing reports and the meeting with parents. The educational specifications suggested the RSP classroom be located near regular education classrooms. This location would allow easy access to the student who would rotate into and out of the RSP classroom. A separate office was requested for the RSP teacher, one that had direct access to the RSP classroom. The classroom would also contain all the furniture and equipment found in other regular classrooms proportional to the number of students served in RSP (Dry Creek Joint Elementary School District, 1989).

Designated instructional services. The educational specifications for the designated instructional services (DIS) described the programmatic needs for the school psychologist, nurse, speech and language specialist. The programs were considered part of a group setting within the school. The center, specified to be near the school's administrative offices, consisted of an office and two large conference rooms (200 sq ft). The programs for the conference rooms were described as individual counseling and testing, group counseling and professional staff meetings, including student study team meetings and individual educational plan meetings. The nurse and psychologist would share an office space in the center. The office was also considered a possible location for individual health evaluations of students, confidential conferencing with staff and parents, and a base of operations for the nurse and school psychologist. Speech and language services were placed in another 200 sq ft room designed to provide individual student evaluations, remediation services, small group instruction and parent interviews.

The educational specifications cited an increasing desire by parents to place students with unique needs on regular school sites and in regular instructional programs. The placement of students with unique needs in regular education programs would increase the total quantity and types of DIS services on school sites and may consequently increase the space requirements to assign additional staff.

The conference room furniture and equipment included those described for the office conference room, except for the request for chairs appropriate for children. The nurse/psychologists office was similar to the assistant principals, with the exception of additional storage for medical diagnostic equipment. The speech and language room had furniture and equipment consistent with a small classroom. All the rooms and offices in the DIS center were required to be soundproof (Dry Creek Joint Elementary School District, 1989).

The final design and location of the RSP and DIS programs in the administration/library building respected many of the requirements that were expressed in the educational specification (see Figure 8, 13 & 14 & 15 & 19 & 26). The RSP and DIS services were placed adjacent to each other, next to the school office. Each room opened on to the main walkway that led to and from the school office and the staff room entrance. The intent of locating the RSP and DIS programs along the main walkway was to encourage communications among classroom teachers and the RSP and DIS employees, and among each other. The location of the RSP and DIS programs facilitated simple directions to parents and non-site employees asked to attend various meetings.

The RSP room (see Figure 8, 19), located next to the library, was designed as a small multi-use classroom with an office area. The entire space was divided into three distinct areas. The main space was designated as an area for small group instruction, with the same utilities as the regular classrooms and proportional storage. At the end of the classroom opposite the entrance, the room narrowed into a second space that was designed as an individual student workstation. One or two students were expected to receive direction instruction in this area, while the second area could be used by students to access a networked computer connection. The third space in the RSP room was the teacher's office. The office was designed to provide a private and secure location for confidential student information, in addition to serving the needs of the RSP teacher (see Figure 8, 26). The RSP office contains the basic furniture and equipment found in the other school site offices.

An unusual feature was designed into the RSP room. A doorway that led into the teachers' lounge allowed the RSP staff access to teachers who might be there. The direct access by the staff to the RSP area was considered extremely important by the district design team, who felt that as the RSP program supported students and their teachers in the regular classroom instructional programs, this doorway provided an easy method for regular communications among all staff members (see Figure 8, 19 & 17).

Nurse/psychologist. The space designed for the nurse/psychologist, located between the RSP room and the speech and language room, was combined with a conference room (see Figure 8, 14 & 15). The conference room/office was located midway between the other specialized services to facilitate communications and planning meetings. The office space was placed within the conference area to be shared by the school nurse and the school psychologist. Both individuals were designated itinerant district employees and were assigned to several district schools, so each could use the office space when performing their duties at that school. The office was designed as a small professional office with the utilities and networked computer access standard in other office and clerical spaces (see Figure 8, 26).

The conference room was designed as a dual-purpose area. The educational specifications allocated the primary use of the conference room to staff meeting space. Without the staff conference room, many meetings scheduled to discuss student assessments and special needs would be held in classrooms. The staff conference room was designed for meetings of one to two hours and did not require the sink and storage designed into the office conference room. The furniture and equipment were the same as in the office conference room.

The secondary use of the conference room was for individual student assessments. Individual student assessments were required as a part of the data reviewed in considering whether a student qualifies for additional educational services. The staff conference room was designed for privacy, security and comfort. Furniture designed for student use accommodated children who would be assessed there (see Figure 8, 14). Note: Individual student assessments are conducted by district specialists, including the school nurse, school psychologist, resource teacher, and speech therapist. All were located in nearby rooms and offices.

School library. The school library was described in the educational specifications as a child-centered facility serving the entire student body and staff, providing information and work/study space in all subject areas, using a variety of media, including books, audio cassettes, videos, films and computers. The library would provide storage for school audiovisual equipment, curriculum materials and staff resources. The library was designed to extend the learning that occurred in the classrooms, using resources provided in the library and sources beyond the school. The curriculum for the library included development of basic library and reference skills, appreciation of literature and personal growth. The greatest impact described in the educational specifications was computerization of library resources, offering greater access to information by students, staff and community.

The planned activities for the school library were class and individual instruction on the use of library resources, reading literature to students, dramatic presentations of literature, art displays and the use of computer workstations for research and class work. The desired location of the library was in the center of the school. Other support services that were specified to be placed near the library included restrooms, computer laboratory and the teachers' workroom. A story pit for oral reading (Kiva) was requested for the library, as well as space for quiet individual study. A workroom for the librarian was designed adjacent to the circulation desk. Storage areas for audiovisual equipment were also requested to be near the circulation desk, and provided with an exterior door for easy removal and return of inventory.

The furniture and equipment requested for the library included items that would be found in most elementary school libraries: tables and chairs for 30 students, eight study carrels with electric outlets, a circulation desk with space for a computer, 750 linear feet of shelving, 150 linear feet of portable shelving, tackable walls, low-light-transmission windows, story kiva for 30 students, microfiche station, anti-theft equipment, 50,000-entry card catalog, magazine rack, and fire and intrusion alarms. The library workroom contained a window wall for visual supervision of the library area, space and materials to repair and process books, telephone and computer connections, personal storage, and space for 6 video cassette players and 3 optical disc players for transmission into classrooms. The audiovisual storage and professional resource area would contain storage space for a slide projector, film projector, phonograph player, film strip projectors, a-v carts and space for 1500 text books, with lockable storage for computer discs, videos, optical discs, audio cassettes and compact discs. The professional library area would contain 32 linear feet of shelving and a card catalog. The library was described as large enough to serve 75 people and would operate with 3 staff members (Dry Creek Joint Elementary School District, 1989).

When the design of the library was completed (see Figure 8, 21), many elements of the educational specifications were included. The major omission in the design was the recessed reading kiva. The kiva was eliminated because of its significant cost and the need for handicapped accessible ramps that would reduce the usable floor space of the library.

The library was designed with high ceilings and tall windows that opened onto the community. It contained the eight student workstations wired for networked computers, shelving for books, a card catalog and a central circulation desk with computer access. The floor space was designed with open areas in the middle of the library, and bookshelves, workstations and racks around the perimeter. The design was intended to permit visual supervision of the room. Tables and chairs were placed in the central section of the library for both student and staff use. The library workroom was designed directly behind the circulation desk (see Figure 8, 26). The workroom contained cabinets, shelves and a sink with hot and cold water. Work space was provided for book processing and repair. Windows in the workroom allowed the library staff to continuously monitor activities in the library.

The audiovisual storage area in the professional library was designed as a space that would be accessible from either the library or the teachers' lounge (see Figure 8, 20). Built-in shelves provided storage and display. As described earlier, the master access for cable television installed in this space was expected to provide in-school television broadcast capability.

A second entry into the library, a doorway designed to allow direct access to the street in front of the school, permitted community access during non-school hours for non-school activities such as voting.

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Computer laboratory. The computer laboratory was considered an important tool in the elementary school curriculum. The educational specifications for the computer laboratory called for a child-centered classroom setting that would be used to teach basic computer skills and extend students ability to obtain research information. Students were expected to begin using computers in kindergarten with teacher assistance, and by the fifth grade, work independently with them. The computers were also considered an extension of learning activities for students with special needs or who had limited English language skills. The computer laboratory was described as a hands-on student experience with teachers monitoring student progress. The requested location for the computer laboratory was adjacent to the school library. Thirty-two computers were designated for student use. The furniture and equipment requested for the computer laboratory included student computers, teacher computer with a large color monitor, counter space designed for computer use around the edge of the laboratory, computer tables, a dry erase board, tackable walls, anti-static carpet, printers, and the storage, utilities and security considerations found in other elementary classrooms. The utilities requested for the computer laboratory were similar to other classrooms, with the exception of additional electrical power, an exhaust fan and a master switch for student computer power supplies (Dry Creek Joint Elementary School District, 1989).

The actual design of the computer laboratory was a combination of the desires expressed in the educational specifications and the physical requirements of the project electrical engineer (see Figure 8, 22). The computer laboratory was located directly adjacent to the school library. Access was designed into the computer laboratory from the library and an exterior door. One bank of high windows was designed into the exterior wall. This would provide indirect light during the school day and reduce glare on the monitors. Counters built along three walls of the room provided computer workstations for the students. Enclosed wire trays built along each shelf near the walls housed the necessary computer connections and power supplies. All computer power supplies in the laboratory and throughout the school were designed as dedicated circuits with electrical surge protection. Network access was also provided in the wire trays. A special cabinet was installed to house a computer that would act as a network server for the laboratory computers. The computer workstations in the library were also connected to the laboratory server and contained all the software provided to laboratory computers. Two laser printers connected to the laboratory served students there. The center of the computer laboratory was left open, with floor-mounted access for laboratory computers. A second series of floor-mounted access points were provided for a teacher's workstation. The floor-mounted access points allowed flexibility in the instructional uses of the room. Thirty-two PC-based computers and a teacher's workstation with a similar computer outfitted with a 32-inch monitor were placed in the laboratory and connected to both the school cable television system and the teacher's workstation. The furniture included student chairs, lockable cabinets and the other services, and utilities found in classrooms, with the exception of a sink. The walls were tackable, with a dry erase board. A special feature in the computer room was the design and installation of a single electrical switch that could be used by a teacher to stop power to all the laboratory computers.

Teachers' workroom. The program described in the educational specifications for the teachers' workroom was a work space for 8-10 adults, with the equipment and supplies to construct instructional materials. The workroom was designed to be used by teachers, staff and authorized parents and community members. No students would be permitted in the workroom. The desired location of the workroom was near the teachers lounge and teacher supply room. The furniture and equipment required in the workroom included photocopiers, fax machine, ditto machine, laminator, book binding machine, paper cutters, die-cut machine, large garbage cans, heavy duty staplers, opaque projector, kraft paper cart, and a primary typewriter. The utilities were consistent with other spaces in the school: a telephone, network outlet, power and security. Special consideration was requested for soundproofing and ventilation of fumes from the chemicals stored in the workroom (Dry Creek Joint Elementary School District, 1989).

The final design of the teachers workroom incorporated many of the educational specification recommendations (see Figure 8, 23). The major exception was the location of the workroom itself. Rather than placing the workroom adjacent to the teachers' lounge, it was placed beyond the library, with no direct access. The design committee felt that the noise, fumes and confusion that was associated with a workroom would detract from the ability of the teachers to relax in their lounge.

The teachers' workroom was accessed through a hallway adjacent to staff restrooms. The workroom was similar to the school office workroom. Cabinets, counters and a sink were provided. Special power outlets and space were provided for photocopy machines. Open storage racks were designed for paper, supplies and small equipment. An exterior door was provided to allow direct access to the street side of the school. A separate ventilation system was provided to reduce the migration of fumes and odors into the remainder of the building. Telephone and network computer access were included, along with the standard utility services and security system.

General School Site

The school site was designed to meet the instructional program needs of the Dry Creek School District. Buildings, playgrounds, hard courts, play equipment and parking lot were located with specific intent. The rationale used by the design committee to place selected items on the school site could be described as a joint-use school/park site with the Roseville City Parks and Recreation Department, with 10 acres designed as a school site and eight acres were designed as a park. This allocation of acreage satisfied the program requirements of both the Dry Creek School District and the Roseville Park and Recreation District (see Figure 9).

Play Fields. The major portion of the play field acreage was under Roseville Park and Recreation Department supervision. The portion of the play field that was part of the Heritage Oak School site contains a full-size softball diamond. The full-size softball diamond was one of two constructed by the Roseville Park and Recreation Department on the joint site (see Figure 9, 10), needed to support the community leagues in Roseville. A third softball site was constructed near the childcare facility on park property (see Figure

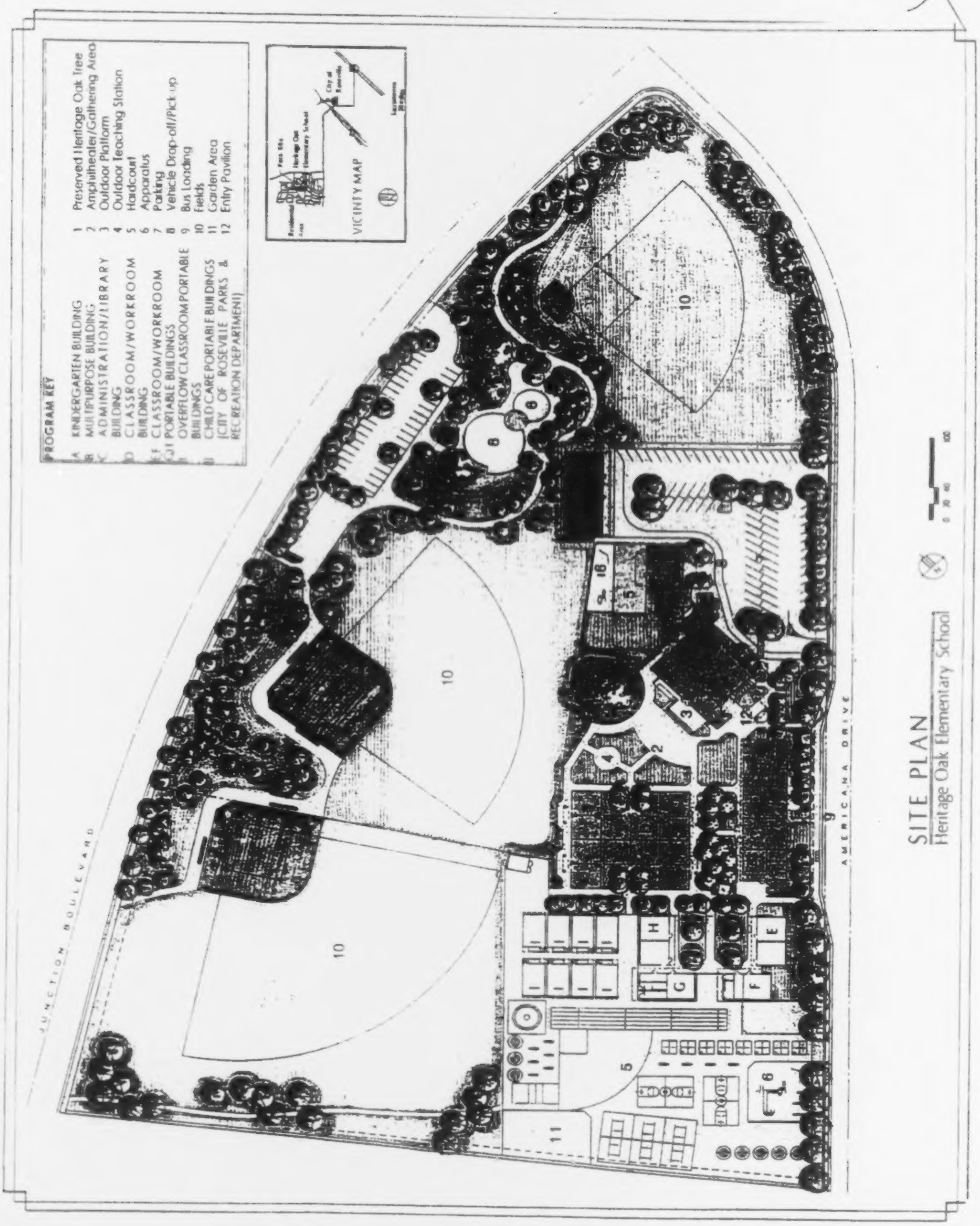
PROGRAM KEY
A KINDERGARTEN BUILDING
B MULTIPURPOSE BUILDING
C ADMINISTRATION/LIBRARY BUILDING
D CLASSROOM/WORKROOM BUILDING
E,F CLASSROOM/WORKROOM BUILDING
G,I PORTABLE BUILDINGS
H OVERFLOW CLASSROOM PORTABLE BUILDINGS
CHILDCARE PORTABLE BUILDINGS (CITY OF ROSEVILLE PARKS & RECREATION DEPARTMENT)
1 Preserved Heritage Oak Tree
2 Amphitheater/Gathering Area
3 Outdoor Platform
4 Outdoor Teaching Station
5 Hardcourt
6 Apparatus
7 Parking
8 Vehicle Drop-off/Pick up
9 Bus Loading
10 Fields
11 Garden Area
12 Entry Pavilion
VICINITY MAP
JUNCTION BOULEVARD
AMERICANA DRIVE
SITE PLAN
Heritage Oak Elementary School

Figure 9. Site Plan: Heritage Oak Elementary School

9, 10) though much smaller, designed for the youngest softball players. When not in use for softball, other field sports, such as youth soccer could be played on the turf areas.

To promote joint use across the entire grassy area, landscaping for both the school district and park district sections were designed at the same time. The grading plans, irrigation system, walkways, landscaping and grass mix were integrated between the two districts. When the play fields were completed, a seamless schoolyard and park flowed across the entire property.

Hard Court. The only hard court lies on the school property (see Figure 9, 5). The design of the hard court and location of play equipment were supported by the educational specifications, the Roseville City Parks and Recreation Department and the Roseville City Police. The hard court area of the school grounds was bounded by homes on the south, a play field on the west, classrooms to the north and a city street on the east. To create recreational opportunities for the students, as well as members of the community after school, a six-foot-high cinder block wall was constructed to separate the hard court from the homes to the south. Limited play apparatus was located near the wall to reduce noise and improve after-school security. The ball walls constructed near the cinder block wall were placed parallel to it to increase visual supervision from the road during non-school hours. Two full-size basketball courts were installed near the street side of the hard court, permitting easy visual supervision of the basketball court from nearby homes or from the street. To reduce or eliminate the use of the basketball courts at night, the adjacent streetlight was modified to cast its light away from the court and onto the street.

The children's play apparatus was located next to the street (see Figure 9, 6), allowing easy access to children and parents during non-school hours, and was within easy view of the homes and vehicles driving by the school. The location also was furthest from the softball diamond, allowing activities at both without interference.

Parking Lot. The school parking lot was designed to serve the school, day care facility and park (see Figure 9, 7). During the school day the parking lot served the staff and visitors of Heritage Oak School. Parents can access the kindergarten room directly from the school parking lot, which also provided vehicle space for after-school and weekend events. The parking lot design allowed deliveries to the food service and custodial areas, and during non-school hours served the childcare facility with car-door-to-day-care-door service. The school parking lot also supports activities on the park site such as baseball and soccer.

Childcare. An external component of the educational specifications was a desire by many parents to have a childcare facility associated with the school site. Community demographics of Dry Creek School District indicated a need for affordable childcare options. The childcare program would supervise children outside the regular school program, operating between 6 a.m. and 6 p.m. each weekday. By providing a childcare program on a school site, the stress to parents caused by transition between school and off-site childcare would be significantly reduced or even eliminated. The instructional program was described as low-key and flexible, providing choices for each child. The childcare program was located near school classrooms, the school office, and the pick-up and drop-off areas of the parking lot, and could enroll up to 60 students (Dry Creek Joint Elementary School District, 1989).

The final design and construction of the childcare program was a joint effort between Dry Creek School District and the Roseville City Parks and Recreation Department. Working together, the childcare facility was designed as part of the entire site. The buildings were located on the park property, and the school parking lot wrapped around the buildings. The design provided curbside access to the childcare facility from the school parking lot. A survey of parents and a review of enrollments indicated that the program would support 150 children per session. As a result, the Parks and Recreation Department designed four classroom modules to house the 150 children. The buildings matched other buildings on the school campus in design and color; for all intents and purposes, they were an extension of Heritage Oak School. When the facility opened, it was fully enrolled, with a waiting list of more than 100 children.

Jointly planning the school site by the Dry Creek School District and the Roseville Park and Recreation Department increased usage of the facility without decreasing the program opportunities. Planning lowered the cost of facilities to the local community by avoiding unnecessary building.

Construction of Heritage Oak School

Heritage Oak School was constructed in two phases: a portable starter school in September 1991, and the complete K-5, multi-track, year-round school in July of 1992. The city of Roseville planned the construction of the park adjacent to Heritage Oak School to be completed when the second phase of the school opened.

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Heritage Oak and Antelope Meadows Schools, touring the entire campuses of both schools as they completed their evaluations.

When the teams had completed their POEs, a series of debriefing meetings were held with each team. Members of the architect 's design team and the district superintendent conducted the meetings, and the results were recorded and compiled into a list of proposed modifications for the next elementary school.

The POE's main question was, "How do the Heritage Oak/Antelope Meadows School facilities meet the instructional program of the school?" The POE committee found that most of the school worked very well in supporting the instructional program. No major changes were requested in the classrooms. One minor change was requested in a storage drawer, to add additional strength, and another to replace the foot-operated pedals in the kindergarten with standard faucet handles on the lowered sinks, on the recommendation of kindergarten teachers.

The most extensive change was in the school office. The location of office space for the principals at both schools created several problems. There location allowed direct access by unannounced visitors to the principal's office, preventing clerical staff from intercepting parents, guests and staff interrupting activities in the principal's office. The only means to secure the privacy of the principal's office was to keep the door closed; this was unacceptable to both school principals.

In addition, when the principal was the only site administrator present, students sent to the office for discipline would enter through the student entrance, be greeted by the clerical staff, scheduled to meet with the principal or cross the school office on the

Rapid enrollment growth pressed the school district to build new schools and open them as quickly as possible. A year after Heritage Oak opened, a sister elementary school, Antelope Meadows, opened to students. Antelope Meadows School was a reproduction of the Heritage Oak facility. The only changes in the design were the position of the buildings on the school site, and the absence of a community park. Antelope Meadows School also opened in two phases as a means of housing students overcrowding the district.

Post-Occupancy Evaluation

In 1994, Dry Creek District requested a post-occupancy evaluation (POE) of both Heritage Oak and Antelope Meadows Schools. The request was made in preparation of the design and construction of the next elementary school, Quail Glen. Representatives from design architectural firm, teachers and staff members from both new schools, members of the district design team, the district superintendent and several community members conducted the process. The POE task force divided into teams with similar interests and representing each school site. They were given portions of the district educational specifications and site plans corresponding to their areas of interest until every section of the specifications was distributed. Each team was asked to evaluate the how their portion of the school facility matched the program requirements expressed in the specifications. The teams were also asked to suggest modifications in the designs and sites that would make them more supportive of the elementary school instructional program. Release days were provided to district employees for each team to visit both

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way to the principal's office. Office work was often interrupted because of a students anti-social behavior or the need to protect private or confidential information that may have been on a staff person's desk.

To address the issues identified in the POE, the principal's office was moved to the opposite side of the school office in the design, and was placed adjacent to the assistant principal's office. From this location, the principal would have direct access to the student entrance of the school office and the assistant principal. A second door was added to the principal's office, allowing direct access to the exterior of the school, thus increasing the ability of the principal to move across the school site, and when necessary, conduct confidential investigations. The interior design and amenities were similar to those designed into the original principal's office.

Relocating the principal's office also required the relocation of the school office workroom and the office sickroom. The school office workroom remained along the staff hallway and replaced the sickroom. The workroom was designed with a door that opened into the hallway and a door that opened into the school office. All the features of the original workroom design were maintained in the relocation. A new workstation was created in the corner of the workroom for attendance accounting. A computer network connection was installed and the counter and cabinets were designed specifically for a computer and the employee who would operate the student attendance system.

The sickroom was placed in the approximate former location of the principal's office, opposite the clerical area and across the aisle from the office counter. The office staff could visually supervise the sickroom through a floor-to-ceiling window wall, though blinds provided privacy when required. The sickroom was designed with the same program requirements, furniture and equipment as the earlier schools. A restroom was directly accessible from the sickroom.

Other minor changes were implemented as a part of the POE due to changes in design requirements, product modifications and program enhancements.

The extensive POE process also provided valuable information about the design process used in planning elementary schools for Dry Creek School District. As stated earlier, Heritage Oak School represented the first attempt to build a new school in the district in more than 100 years. There was no prototype to follow. A new, untried instructional program (K-5 vs. K-8) and a radical calendar (multi-track, year-round) were implemented. This was to be the first school with a joint-use partner (the city of Roseville) and an integrated childcare program. Would all the innovations and changes desired by Dry Creek School District create a successful instructional program, housed in a facility worthy of the program?

The POE indicates it has. After one year of operation in two different locations, the schools planned and designed by Dry Creek School District were found by the district staff, community and architect to be meeting or exceeding the program requirements in almost every area. No major modifications were required or suggested.

Summary

The Heritage Oak Elementary School was first school to be constructed in over 100 years by the Dry Creek School District. The occupancy of the school was proceeded by a decade of research, planning, financing, and designing in an effort to build the best

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possible new school. Lead by a dedicated board of trustees, the district called upon it's staff, parents and local community leaders to invent a multi-school system with appropriate educational programs and facilities. Outside consultants were hired to facilitate various task force groups in the design of a district wide K-8 curriculum, facilities master plan, grade level configuration, facilities financing plan, educational specification, architectural charette, and design of the school. Additional support was given to the process by the residential developers building homes within the school district. Their initial financial contributions funded the studies that eventually created resources to construct the Heritage Oak School and all other Dry Creek schools.

The Heritage Oak Elementary School was seen by its staff, students, and community to be an extension of the elementary curriculum and would serve as excellent model for additional district elementary schools. The efforts of the Dry Creek School District to build it's first school were successful.

Independent Recognition

Beyond the post occupancy evaluation conducted by the Dry Creek School District several independent validations of the planning and design process for the Heritage Oak School occurred. Each was an independent review of the planning, design and construction of the Heritage Oak School. One review was a comparison to a elementary school of similar size constructed in sister Placer County school district. The second was a review by a panel in competition with other public schools in north America.

Placer County Grand Jury

The first was a report complied by the Placer County Grand Jury in June of 1994 (Placer County Grand Jury, 1994). The Placer County Grand Jury was asked to investigate a complaint that another local school district had constructed an elementary school that had exceeded its construction budget and contained design problems. In conducting their investigation, the Grand Jury (a) reviewed hundreds of pages of detailed school construction data from Placer County, (b) toured Antelope Meadows Elementary School in the Dry Creek School District with the school architect and superintendent, (c) were briefed on the planning and design process used to build both the Heritage Oak and Antelope Meadows Schools, (d) toured the school in question which was constructed by the same contractor as Antelope Meadows, and (e) visited and photographed other school in Placer County.

The Grand Jury focused their efforts on three areas that school boards have "the greatest latitudes and fewest checks and balances." They were the development of the educational specifications, the selection of architect and the relationship between the board of trustees, superintendent and building contractor. Special mention was made of the Educational Specifications written by the Dry Creek School District and the process used to create its content. The Creation of the (educational) specification was an essential first step in the design of the new school. When this document was completed the district trustees and the superintendent had a well researched and comprehensive description of the project, written in non-technical language. After this specification was approved by the school board, the district had an authoritative document to guide the architect's work on school design (Placer County Grand Jury, 1994).

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After considering responses from other school districts in Placer County, the Heritage Oak and Antelope Meadows Schools were selected by the Grand Jury as "model projects" because of the joint use opportunities with the parks and recreation departments, the integrated child care, flexible classrooms with teacher offices, and multi-track year round schedule.

In summary the Grand Jury wrote "The management of these school projects (Heritage Oak and Antelope Meadows Elementary Schools) by the board and the superintendent serves as a model of how the job should be done" (Placer County Grand Jury, 1994).

James D. MacConnell Award

In 1990, the Council Of Educational Planners International (CEFPI) initiated the James D. MacConnell Award to honor the memory of the Late Dr. James D. MacConnell. The CEFPI founded in 1921, was recognized by school facility planners, architects and educators as the organization that influenced the nature of school buildings planning and design through out the world (Castaldi, 1994). James MacConnell was considered to be a prominent leader in the planning and design of school facilities and carried the majority of his work at Stanford University (Castaldi, 1994).

The MacConnell Award recognized the educational planning excellence, from the determination of need for the facility, through occupancy and all segments in between. The winning project must demonstrate a comprehensive planning, design and construction process. Criteria for evaluating the process included, a through planning phase, development of a comprehensive educational specifications and/or programs of requirements, contemporary design that meets the requirements of the school district's educational program with special emphasis on functionality of educational spaces, evidence of flexibility within the facility to efficiently meet future changes in the educational program, and evidence of usage of materials, color and lighting that enhances the educational environment (Council of Educational Facilities Planners International, 1991).

Projects entered in the competition for the MacConnell award may be from any CEFPI member. In previous competitions entries were received from around the world. Judging the entries was a panel of three distinguished educational planners. They reviewed the applications submittal and made visitations to the top school projects. After analyzing the data and award's criteria, a winner is announced at the annual CEPFI international conference.

On September 17,1994 at the 71st Annual International CEFPI Conference, the Heritage Oak Elementary School was name the 1994 winner of the James MacConnell Award. The Heritage Oak School project was selected from a field of seventeen entries representing the United States and Canada. The award was shared by the Dry Creek Joint Elementary School District, Stafford and King Architects, the City of Roseville and Dr. Glen Ovard, district educational planning consultant. In presenting the award to the Dry Creek School District, City of Roseville, Stafford And King, and Dr. Glen Ovard (Council of Educational Facilities Planners International, 1991). Spencer Graves, Head Jurist of the MacConnell Award's Committee, made the following remark in his awards presentation speech.

The "MacConnell Award" recognizes the significant contributions made by Dr. James MacConnell to the profession of educational facility planning and to CEFPI. This award is presented for outstanding planning and implementation and honors Jim's philosophy of integration of all portions of the facility planning process.

Seventeen projects, reflecting outstanding planning work by our members, were submitted for consideration for the 1994 MacConnell Award. The jury members, Bill Morely, Vern Burk and Spencer Grave were challenged to determine which project would be honored.

The winner of the 1994 James D. MacConnell Award is the Heritage Oak Elementary School; owner-Dry Creek Joint Elementary School District; the City of Roseville; Architects-Stafford King and Associates; Educational Planner- Dr. Glen Ovard.

Heritage Oak Elementary School is an example of how the construction of a school, and the joint planning that precedes it can improve community relations and bring residents together toward a common goal- to provide the best educational environment possible for its children.

The comprehensive planning for the first new school in 100 years began in 1980. The city of Roseville believes, as does the school district, that it is important to have the community support the development of their children. The city joined the district in providing leadership in fulfilling the vision of community ownership by taking the early lead in working with the developers to raise the initial funding for the school. By 1984, agreements wit the land developer and the city allowed 18 acres to be set aside for the new school as well as the identified community needs. Considerations in the education specification required establishing child care facilities, park and recreation spaces, community use areas, as well as providing for the flexibility needed by a growing district and for instructional technology. The school and park are integrated to provide maximum facilities for school and community use.

Community access has been encouraged by the overall campus design. The parking lot serves both the school staff, the community park, and also provides direct access to the child care program which is operated as a partnership between the District and the City. The integration of a park and school site provides an environment for many joint school/community functions, such as performing arts, community meetings and recreational programs. The school fulfills the vision of community center on a school site, provides open access and promotes neighborhood ownership.

To maintain continuity of service with student increases averaging 47% for the last two years, the district embarked on an aggressive use of technology. In partnership with Hewlett-Packard, a design and implementation of the infrastructure for local area networks connected to the district offices with the school. Parents and staff members access to computer networking, cable television, telephone service and fully operational LAN provides access to data sources with in the school and to information services that are outside the district.

The design for the school was part of the California School Facilities Program and had to follow the rules and regulations of the State. These unique criteria include allocating 59 square feet for each child and because the school is multi-track year round, the allocation was reduced by 20 percent. the district were also required to construct 30 percent of the classrooms space in portable buildings, meet strict earthquake requirements, use prevailing wage rates, and meet participation requirements from minorities, women and disabled veterans.

The success of planning and construction of this school was highlighted when the 1994 Grand Jury of Placer County, selected as one of the models for how the management of school projects should be done. On the subject of schools and parks cooperative design, the Grand Jury said, "This project (Heritage Oak Elementary School) is a prime example of cooperation between a park and school district."

After careful consideration and visits to campuses, the selection jury feels that this school, Heritage Oak Elementary, meets the intent and the criteria for this award. This submittal showed through the planning process necessary for a successful facility; documented by the development of the educational specification and program; evidenced a contemporary design that meets the program requirements for functionality and flexibility; and shows that materials, color, lighting and a myriad of other components can be combined to make an outstanding educational environment (Council of Educational Facilities Planners International, 1991).

CHAPTER IV

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The construction of public schools in the United States has become a topic of significant national interest. New school construction will be required to house increasing student populations and replace failing facilities. In addition to the schools that must be constructed, the majority of existing schools will require renovation and modernization to meet increased instructional and community use requirements. The total cost of such an undertaking will be in the hundreds of billions of dollars. Most of the efforts to construct schools will be a compromise between need and cost without the benefit of adequate planning. Curricular needs and instructional programming are often minimized in situations where school facilities are urgently needed. In addition to the lack of preplanning for new and renovated school facilities, school administrators are not being prepared to undertake the challenges of school facility analysis and planning. Those academicians knowledgeable in the facets of school facility planning are rapidly leaving the profession through retirement and are not being replaced. The irony of these lost opportunities for proper planning is the documented evidence that well-planned school facilities can have a positive effect on the education of students.

The Case Study of the Heritage Oak Elementary School in the Dry Creek Joint Elementary School District is an example of a well planned and designed facility that used an inclusive, systematic, curriculum driven process to build an award winning school. Receiving the James MacConnell Award in 1994, the Heritage Oak School was judged to be the best example of planning and design by the Council of Educational

Planners International. The award has added significance because the Heritage Oak School was the first new school in more than 100 years to be constructed in the Dry Creek School District. The only resources available to the Dry Creek School District in preparing to build the Heritage Oak School were a small single K-8 school building, a superintendent/ principal, the teaching staff, the Board of Trustees and a participatory planning process.

Statement of the Problem

Public school facilities throughout the United States are being constructed and renovated as local school districts respond to the needs of changing curricula, technology and community expectations. Often these construction projects represent the design efforts that respond to the immediate needs of the school district and the constraints of their budgets. Little thought is given by school boards and administrators to the long-term investment being made in the instructional environment for their students, staff and community. The conflicts that can arise from program and facility needs, energy accessibility and conservation, renovation and demolition are issues seldom considered in the planning of a school. Simply stated, systematic planning of our public schools is often the least considered element in the entire construction process. Yet the resulting facility will have a long-lasting effect on the instructional curriculum, lasting between fifty and seventy years, and making a statement about the commitment on the part a community to its public education system. For those school districts that wish to plan their school facilities by incorporating a systematic process, there is little practical information available. Even more disturbing is the lack of trained professional personnel that could assist these school districts. For these reasons a historical case study describing an acknowledged successful process to plan and construct a school facility would be valuable to those who are stakeholders in the building of school facilities.

Statement of Purpose

The purpose of this historical case study was to describe a district facility planning process used by the Dry Creek Joint Elementary School District. The Dry Creek School District consisting of one small K-8 school designed a new facility that would meet the requirements of a changing instructional curriculum, increasing community expectations and advances in instructional technology. The facility planning process was internationally recognized for its success by an independent jury from the Council of Educational Facility Planners International.

Questions to be Answered

The following questions were designed to answer the statement of purpose in this study.

1. What were the elements of a successful planning process?

2. What individuals and organizations were important in the planning process?

3. What were the critical decisions that impacted the planning and design process?

4. Why was the Heritage Oak Elementary School selected as the 1994 James MacConnell Award winner?

5. What modifications would be made to the process in designing future schools?

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Delimitations

The case study will be delimited to the policies, process and events used to plan, design and construct the Heritage Oak Elementary School in the Dry Creek Joint Elementary School District and the historical information relative to this process which culminated in the receiving of the James D. MacConnell Award for excellence in school planning and design.

Methodology and Procedures

The methodology used in this study was a historical case study. The case study described the process and events employed in the planning, design, construction and post occupancy evaluation of the Heritage Oak School. A review of the related literature, documents, proceedings and public records described the process and procedures that affected this process. The review included the following:

1. Reports from journals, professional meetings and conferences held to discuss school facility planning in the United States with emphasis on school facilities in California.

2. District documents, minutes from the district Board of Trustee meetings, task force reports, special studies commissioned by the district and other district records were used to develop a history of the Dry Creek School District.

3. Land development plans for the City of Roseville, Placer and Sacramento Counties were used to identify the changes in the demographic patterns of the district and their impacts on enrollments.

4. Reports from consultants contracted by the District during different periods of time that were used in the development of a master plan for school facilities, educational specifications, and school facilities finance resource planning guide.

5. Reports from district planning task forces composed of teachers, administrators, parents, community members and business leaders in the planning process.

6. Legal opinions, briefs, appeals and court decisions concerning school facilities were provided by special counsel to the District, general counsel of the District, and by attorneys filing "amicus" actions for the District.

7. California legislative actions having an impact on the planning process of the Dry Creek District. These include the legislation that affected design and funding of public schools.

8. Reports of action by the local governmental planning agencies, and the applicable city/county regulations, policies, and practices.

9. Joint use agreements created between the City of Roseville and the Dry Creek District were described to document the cooperative efforts between the City and the District.

10. The application and jury comments of the CEFPI related to the selection of the Heritage Oak School as winner of the James D. MacConnell Award.

11. The post occupancy evaluation of the Heritage Oak School conducted by the District and its architect.

Summary of Findings

Question 1

What are the elements of a successful planning process?

1. There are five identified elements in the planning of a new school facility. They are in order:

Long Range Planning

Long range planning is the ability of the school district to determine the facility needs it will face over an extended period of time. The planning process includes the new schools that will be needed, the existing schools that will be renovated, modernized or closed.

Instructional Program Planning

Instructional program planning defines what will be taught in the school facilities and what grade level configurations will be used by district schools. The instructional program planning may also include the type of school calendar adopted by the district.

Community Needs

Community needs may be related to recreation, child care and continuing education. Planning for community needs include consideration of shared programs and spaces.

Building Specific Planning

Building specific planning requires analysis of each building in a facility to determine how it will promote or enhance the instructional program.

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Post Occupancy Evaluation

The post occupancy evaluation of a facility occurs after the facility is constructed, occupied and in operation for a reasonable period of time. It is conducted by asking the individuals assigned to each space within the facility how their space responds to the instructional needs of those who use it and what modification should be considered in future designs. The information from the post occupancy evaluation becomes the basis for future facility design modifications.

If the building is being considered for a modernization project then two additional steps are recommended. The two steps are:

Modernization and Reconstruction Planning

The consideration of whether a facility is modernized, reconstructed or abandoned must be evaluated carefully. Among the most important issues to be considered is whether the remodeled facility will meet the instructional program needs of the curriculum.

Estimated Cost

The cost of a modernization project must be considered in determining if the project is viable. The cost benefit analysis must include the perceived community significance of the facility.

In addition to the above elements of a successful planning process, one additional intangible element must also be considered. That intangible element is the shared belief by all participants that their efforts will improve the design of a school facility and provided a better instructional program.

Question 2

What individuals and organizations were important in the planning process?

The individuals and organizations that were important to the planning process represent the stakeholders of the district. The list included representatives from the (a) school district, (b) the community, (c) local and state agencies, and (d) the business community.

School District

The school district representatives in the planning process were selected because of work experience and knowledge of the district practices. It should be noted that if the Dry Creek School District was an employee's first school district of employment, he or she was paired with a person from another neighboring school district. The pairing allowed the Dry Creek District employee a second option on the program needs of our district. The employees represented every job classification in the district and included site and district office staff. A member of the board of trustees was also a member of the planning process.

Community

Community members from the Dry Creek District were recruited from the school site councils, the county special education advisory board, and school parent organizations. They were selected because of their working knowledge of the instructional programs of the Dry Creek District and their leadership positions in the community. Each parent also represented the interest of their children. In some situations, members of the planning process severed as both parents of students in the district and district employees.

The local and state agencies were requested to participate because of their expertise in special areas. Members from the Placer County Office of Education served as consultants to the planning process in the areas of special education programs and maintenance. The special education staff members provided important information about program needs that would be required as the district enrollments increased and student needs diversified. The maintenance staff provided information about the anticipated needs for equipment, supplies and storage. Maintenance staff also provided important information on the life cycle cost of systems and the durability of materials.

A second major local agency to participate in the planning process was the City of Roseville's Parks and Recreation Department. The participation of staff from the parks and recreation department created the opportunity to implement a joint use plan for the entire eighteen-acre school and park site. The programs that were included as a result of the joint planning were; on site day care, ball fields, after school recreation, after school adult programs and the shared use of parking lots.

The members of state agencies were helpful in site selection and use criteria, food service requirements and the development of a funding methodology that included local developer fees and a local parcel tax.

Representatives of local businesses provided funding and personnel. Local developers supported the planning efforts and two local bond elections. Local business personnel provided expertise in communications, technology, recreation, site and building security and playground safety. In several situations, the business community allowed the district the use of their facilities for meetings and planning sessions.

Question 3

What were the critical decisions that impacted the planning and design process?

Six critical decisions impacted the planning and design and process. They were: (a) the use of a systematic planning process based on school facilities planning research, district instructional programs and the district vision for educational services, (b) the development of a long range analysis of the school district facility needs, (c) providing the appropriate time and funds to conduct the planning process, (d) the inclusion of the stake holders in the planning process, (e) the use of expert consultants and (f) the selection of a qualified architectural firm.

Systematic Planning Process

The planning process employed by the Dry Creek School District was based on research described in various publications on school facility design. The commitment to a systematic process was made by every member of the school district and included the board of trustees. Eventually the local land developers in the school district recognized the value of the planning process and supported the district with contributions of time and money.

The instructional program and a vision for future schools were adopted early in the process and became the foundation for many future decisions. The instructional program of the school district continued to be child centered with special recognition of

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their developmental needs. The result of this decision was to create schools configured with grades kindergarten through fifth housed at one site (elementary schools) and grades six through eight (middle schools) on another site.

The vision of a "school as community center" was extended from the original Dry Creek School to each additional school constructed in the district. The vision was implemented by designing school facilities that would serve not only the educational needs of the students but the needs of the non-school age district residents. The result of this decision was to create a campus that had an open design, with no fences, adjacent to a city park, active recreational programs and a day care facility serving both the elementary school and the community.

Long Range Analysis

The planning for the Heritage Oak School was part of a long range analysis of the school district facility needs. In completing the long range analysis of the Dry Creek District, enrollments, number of schools, types of schools, locations of school sites, future school attendance areas and cost associated with the facilities were identified. Each school constructed, including the Heritage Oak School, in the Dry Creek School District conformed to a profile identified in the district adopted school facility master plan. The advantage of the long range analysis was to allow a school district the information necessary to anticipate its future needs. The future needs were translated into an action plan for additional facilities and funding mechanisms.

Adequate Time and Resources

School districts must decide the level of significance that a school facility will play in its instructional program. If the school facility is considered an instructional priority, the necessary time and resources will be allocated to plan and design the facility. Unfortunately school districts are often placed in the situation of having an immediate need without the appropriate time necessary to participate in a complete planning process. Having a school facility master plan will provide a school district with the opportunity to plan before facilities are needed. The level of detail, available personnel, and budget amounts will determine the time that can be allocated for facility planning.

In the Dry Creek School District, the planning process prior to final design was approximately one year. The process included the development of educational specifications and the use of a design charette.

Resources for the planning process included funding of the personnel participating in the process. Consideration of travel, meetings, release time, substitute employees, resource materials, food, document production and consultant fees must be included as a part of the resource planning. School districts must decide what level of resources will be committed to the planning process. The budget will in large part determine the priorities of the planning process.

Inclusion of Stakeholders

The planning process relies on people. How many people and who they represent are important decisions that must be made in the initial stages of the planning process. The literature suggests that representation be given to those who have a stake in the school or school district. Basic knowledge of the school district, an interest in education and commitment to the planning process are minimum qualifications for participation. The stakeholders should represent; teachers, classified services, site and district administration, parents, community leaders, local agencies, business leaders, the school board, other school districts and students as appropriate.

An essential element in the selection of individual stakeholders is a strong belief in the goals of the school district and the capacity to work well as a team member. The priority of the planning team must be focusing on the task of designing schools to meet the educational program of the school district and the vision of the district.

The Dry Creek School District included a wide range of educators, community members, parents and business leaders in its process. All were guided by the district mission statement and instructional curriculum in the planning process.

Expert Consultants

The use of expert consultants increases the potential of a successful planning process. The consultants are external to the school district process and provide an unbiased prospective. The consultants can provide expert knowledge about the complex issues surrounding school facility planning which can improve the efficiency of the process. Consultants are not permanent district employees and serve at the pleasure of the district. Consultants can be employed for specified work and for a specified cost. Without the use of consultants, the planning process will rely solely on district staff. As indicated in the research, few educational administrators are trained to deal with the complicated issues of facility master planning.

The Dry Creek School District employed consultants in the facility master planning process. The range of their assignments included:

- Demographic Research
- Legal Research and Representation
- Bond Funding and Elections
- Curriculum Development
- Joint Use Planning and Agreements
- Facility Analysis
- Environmental Review
- Budget Development
- Educational Specifications
- Contract Negotiations

Qualified Architectural Firm

The selection of the architectural firm by a school district is the bridge between the planning process and the actual school building. Care must be taken in the selection process to insure the planning efforts become a facility that executes the vision of the district and the requirements of the district curriculum. Demonstrated experience in school design, working knowledge of applicable laws and regulations, appropriate staff size, and a commitment to the school district planning process are among the minimum qualifications in evaluating an architectural firm. Several professional organizations and state departments of education can provide school districts with specific information about methods to select school district architects.

The Dry Creek School District chose the architectural firm of Stafford, King and Associates for the design of the Heritage Oak School. At the time of their selection, Stafford, King and Associates had established a solid reputation with other local school districts and had successfully completed school projects funded by the California State

School Building Program. Most important was the commitment of the principals of the firm to the participatory school facility planning process of the Dry Creek School District.

Question 4

Why was the Heritage Oak School selected as the 1994 James MacConnell Award winner?

The Heritage Oak Elementary School was selected from seventeen projects entered by school districts in United States and Canada as the 1994 winner of the James MacConnell Award. The judges stated that the Heritage Oak School represented the best example of the planning, design and construction of school that honored the philosophy of Dr. James D. MacConnell.

In making their selection, the judges stated that Heritage Oak School was an example of how the construction of a school and its planning could improve community relations and bring residents together toward the common goal of providing the best educational environment for children. The judges felt that this common goal was shared by the leaders of the City of Roseville, the Dry Creek community, the district architect and the Dry Creek School District.

The award citation also recognized the documented planning process, involvement of district stakeholders, detailed educational specifications, contemporary design, selection of construction materials and flexibility of the facility. The jury noted that all of these characteristics were accomplished while the Dry Creek School District participated in California State School Building Program which imposed significant restrictions on the size and cost of the school project.

Question 5

What modifications would be made to the process in designing future schools?

The only modification in the school facility planning and design process would be the inclusion of recent research data about the effects of environment on student behavior and learning. It would be the responsibility of the school district to insist that their design professionals integrate this information in the planning process.

Conclusions

Based on the review of the literature and the information provided in this case study, several conclusions can be made. They are: (a) the process used to plan, and design the Heritage Oak School provided an outstanding school facility, (b) the success of the design process relied on a commitment to a systematic plan built upon the instructional curriculum and including the stakeholders of the school district, (c) the evaluation of the planning and design process was conducted when the facility was completed and occupied and (d) the success of the planning process was dependent on the commitment of the participants to the goals of the district.

The conclusions were drawn from the information reported in this document. The following is an expansion of each conclusion and provides the basis for them.

Conclusion a

The process used to plan and design the Heritage Oak School provided an outstanding school facility. Evidence in support for the conclusions is as follows:

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1. The Heritage Oak School was awarded the 1994 James D. Connell honor in open competition with 16 other preselected school facilities from the Council of Educational Facility Planners International membership.

2. The MacConnell Award recognized the excellence in the over all educational planning process from the initial need for the facility through occupancy.

3. The Heritage Oak School demonstrated excellence in each phase of the planning process.

4. The Placer County Grand Jury selected the Heritage Oak School as a model for school planning, design and construction in Placer County.

Conclusion b

The success of the design process relied on a strong commitment to a systematic plan by the Dry Creek School District built upon the instructional curriculum and involving the stakeholders of the school district.

1. The literature established that a comprehensive planning process provided the best opportunity for a school district to design an effective school facility. By adhering to a comprehensive planning process, the Dry Creek School District anticipated and addressed the three common failures in school design; lack of time, lack of resources and lack of vision.

2. The planning process for the first school in the Dry Creek School District to be constructed in more than 100 years began ten years before it would be occupied.

3. Funding for the planning process was obtained from local developer contributions, building fees, a school bond and the district's general fund.

4. The Dry Creek School District's comprehensive planning process included an anticipated instructional program that would evolve from a single school with self contained K-8 classrooms to a multi-school district with K-5 elementary schools, 6-8 middle schools and all on multi-track year round calendars.

5. The educational specification for the elementary school was created from the proposed K-5 instruction curriculum of the Dry Creek School District.

6. The members of the educational specification writing team represented the various stakeholder that would have an interest in a Dry Creek School District K-5 elementary school.

7. The educational specification for the Dry Creek School District K-5 elementary school was reviewed and approved by the District Board of Trustees.

8. The architect of record for the Heritage Oak Elementary School was required to incorporate the Dry Creek School District K-5 educational specification into the design process.

9. Design of the Heritage Oak Elementary School was completed by a subgroup of the educational specification committee in an intense process known as a charette.

10. Design of the school facility included joint use of park site and child care programs.

11. Final design of the Heritage Oak School facility, site and joint use was approved by the Dry Creek School District Board of Trustees.

12. The Heritage Oak Elementary School was planned and constructed in two phases to accommodate the rapid increase of students in the district.

13. The complete school was opened in 1992 as a K-5 multi-track year round calendar school.

14. Since 1992, the Dry Creek School District constructed three additional elementary schools using the Heritage Oak School educational specification with minor adjustments for site configurations.

15. The Dry Creek District has used the same process to design and to construct two new middle schools with the same degree of satisfaction.

16. The Dry Creek School District has received a design award for its middle school constructed in 1999.

Conclusion c

The evaluation of the planning and design process should be conducted when the facility is complete and occupied.

1. A post occupancy evaluation was conducted to determine the effectiveness of the school to meet the instructional needs of the K-5 curriculum.

2. Design modifications for future elementary schools were minor and confined to the administrative portion of the school facility.

Conclusion d

The success of the planning process is dependent on the commitment of the participants to the goals of the district.

1. All participants believed that their participation would improve the planning process and their school facilities.

2. All participants supported the concept that the planning process would improve the instructional program of the school district.

3. All the participants supported the concept that school facilities should support the instructional program.

4. All participants supported the concept that the design of a school facility could be used to teach children.

5. All participants supported the concept that a school is a community center.

6. All participants supported the concept that the design, use and maintenance of a school facility are an expression of the priority education has in their community.

7. All participants supported the concept that a school is a public facility.

Recommendations

Based on the finds and conclusions of the study, certain recommendations were made for both future action and for further research.

Recommendation for Action

It was recommended that:

1. School districts use a comprehensive participatory planning process to prepare for additional facilities and the modernization of existing facilities.

2. The planning process must be directed by a clear statement of intent for the process, and a strong reliance on the district's instructional goals and beliefs.

3. School districts provide appropriate time, money and personnel to the planning and design process for school facilities.

4. School districts use current and anticipated district curriculum and instructional programs as the basis for planning the design of school facilities.

5. School districts plan for community needs that may be met through joint planning of school sites and facilities such as parks, day care, play fields and multipurpose rooms.

6. School districts conduct post occupancy evaluations upon the completion of every project and the information obtained is considered in future designs.

Recommendations for Further Research

The following recommendations for further study are offered:

1. A study to determine the common characteristics of the planning process used by the school districts that were awarded the James D. MacConnell recognition by the CEFPI. The identified characteristics may serve reinforcement for effective practices in the planning process.

2. A study to determine the level of formal preparation school district superintendents have received in school facility planning. As the chief officer of the school district and the instructional leader, it would be of interest to measure their understanding of the long lasting and interrelated relationship between environment, learning and planned facilities as reported in this study.

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Report of Significant Post Study Events:

The completion of the Heritage Oak School signaled the beginning of a continuous sharing of the benefits of a comprehensive facility planning process. In addition to the receiving the Mac Connell Award, the principal members of the planning team were invited to present the planning process for the Heritage Oak School at the 1995 CEFPI annual conference. The Heritage Oak School has had guests and visitors from other states, Canada, South America, Japan and Mexico seeking information about the school and its planning process. The Heritage Oak School has been the subject of newspaper articles. The California Department of Education continues to reference the Heritage Oak School as a model for facility planning, joint use and the implementation of multi-track year round education. In 1998 the Heritage Oak School was selected as a model for the design of an elementary school in a neighboring school district that was experiencing rapid student enrollment growth.

The lessons learned from the facility planning process continue to influence the creation of schools in the Dry Creek School District. In 1998 the Dry Creek School District received additional recognition for the design of the Silverado Middle School by the Coalition for Adequate School Housing (CASH). CASH is the state wide California coalition of public schools, architects, planners, and other school facility related interest organized to support California public school facilities. The Silverado Middle School was designed using the same process as the Heritage Oak Elementary School.

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APPENDIX

DESIGN PORTFOLIO: HERITAGE OAK SCHOOL

DRY CREEK JOINT ELEMENTARY SCHOOL DISTRICT

ROSEVILLE, CALIFORNIA

TABLE OF CONTENTS

Page

Introduction 209

Section 1

James Mac D. Connell Award 213

James D. Mac Connell Award Announcement 215

The Educational Facility Planner: 1995 Design Portfolio 219

Heritage Oak School News Articles 225

Sacramento Bee, August 26, 1994 227

California Schools, Winter 1994 228

Section 2

Educational Specifications 233

Dry Creek Joint Elementary School District Educational Specifications 235

Board and District Administration 236

Committee Members 237

Table of Contents 238

General Introduction 240

Dry Creek School District Mission Statement 241

Section 3

Heritage Oak School/Park Site 245

Site Plan 247

Photos

Entry Pavilion 248

Page

Heritage Oak Tree and Outdoor Teaching 249

Amphitheater 250

Overall School Site 251

Educational Specifications

Physical Education - Outdoors 252

Outdoor Education 256

Grounds 260

Heritage Oak School Administration and Library Building 263

Floor Plan 265

Photos

Administration Lobby 266

Library 267

Computer Laboratory 268

Educational Specification

Office - Reception 269

Library - Media 274

Computer Laboratory 280

Heritage Oak School Classroom and Workroom 285

Floor Plan 287

Photo

Teacher's Workroom and Year Round Education 288

Page

Educational Specifications

First Grade Classrooms 289

Heritage Oak School Multipurpose Building 295

Floor Plan 297

Photo

Multipurpose Room 298

Educational Specifications

Multipurpose Room and Convenience Kitchen 299

INTRODUCTION

The enclosed appendix is a collection of supporting documents that relate to the Heritage Oak Elementary School Section 1 describes the James D. Mc Connell Award presented to the Dry Creek School District for the heritage Oak Elementary School. Section 2 contains portions of the Dry Creek School District Educational specifications developed for its elementary schools and describes the participants and the process used in developing the specifications. The heart of the appendix is Section 3 which is devote to displaying the heritage Oak School.

Opening each portion of Section 3 is the site or floor plan of the school. Following the plan are photographs of the actual school facility. The educational specification for each area follows the photographs.

By following the sequence of plans, photographs and educational specifications, the reader will be able to determine the degree of fidelity between planning, design and construction that was recognized in the Mac Connell Award.

Heritage Oak School

Dry Creek Joint Elementary School District

Roseville, California

1994 James D. Mac Connell Award Winner

Council Of Educational Planners International

Section 1

James D. Mac Connell Award

James D. Mac Connell

Award Announcement

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The James D. MacConnell Award
1994

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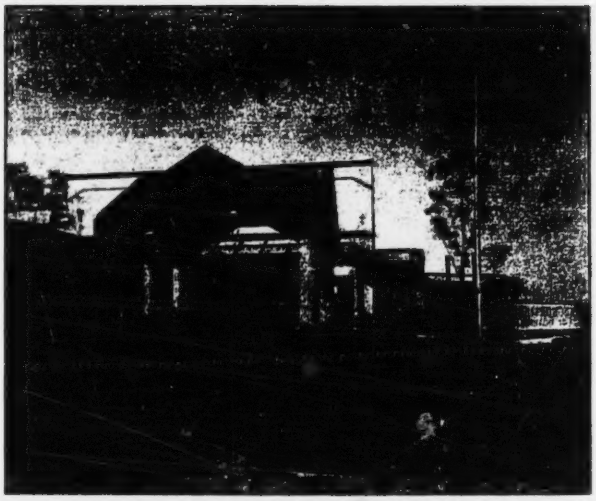

HERITAGE OAK ELEMENTARY SCHOOL
DRY CREEK JOINT ELEMENTARY SCHOOL DISTRICT
ROSEVILLE, CALIFORNIA

The Educational Facility Planner

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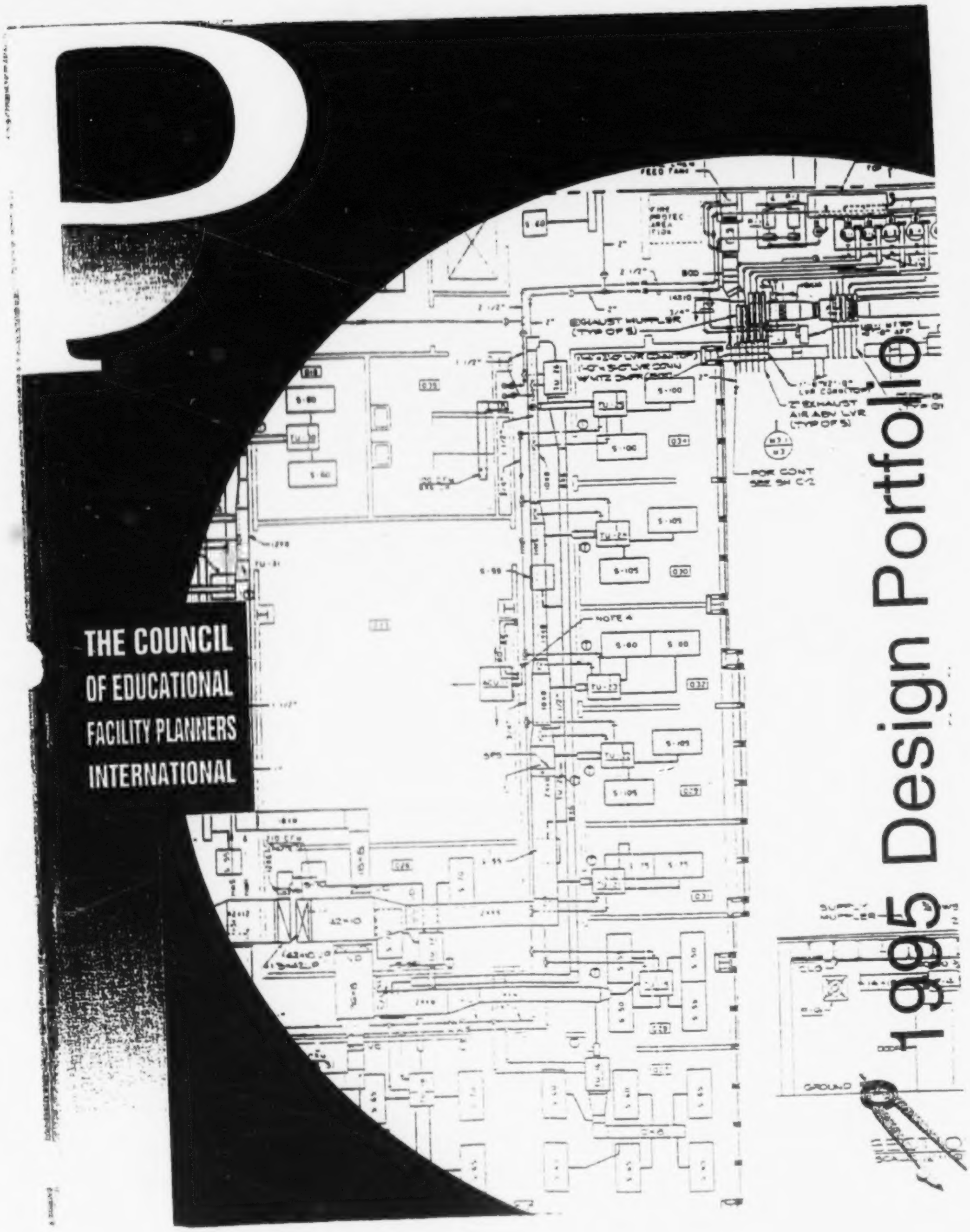

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1994 James D. MacConnell Award Winner

Heritage Oak Elementary 4

ELEMENTARY SCHOOLS

Anna Elementary School 7
Canyon Crest, Mango, Hemlock—Prototype 8
Evans Elementary 9
Frankstown Elementary 10
Lura Kean Elementary 11
Mililani Mauka Elementary 12
Nay Ah Shing Lower School 13
North Ridgeville Education Center 14
South Lakewood Elementary 15
Yennadon Elementary 16

MIDDLE SCHOOLS

Farmington Middle School 18
Hamilton Southeastern Jr. HS 19
Harry S. Truman Middle School 20
Herbert H. Cruickshank Middle School 21
La Joya Middle School 22
Mesa Verde Middle School 23
Mountainside Middle School 24
Thornton Middle School 25

HIGH SCHOOLS

Indian Hills High School 27
Nay Ah Shing Upper School 28
North Surrey Secondary 29
Salmon Arms Senior Secondary 30
Southwest High School 31
Waukesha West High School 32

VOCATIONAL SCHOOLS

Katheryn Wentzell Lumley Aviation Center 34

HIGHER EDUCATION

Alvin C. Bush Campus Center 36
College of the Sequoias, Science Center 37
Northern Illinois University 38

OTHER

Cypress Lake Center for the Arts 40
Oakpoint Intermediate School 41

The *EDUCATIONAL FACILITY PLANNER* is a bimonthly publication of the Council of Educational Facility Planners, International and is written, produced and mailed from CEFPI Executive Headquarters, 8687 E. Via de Ventura, Suite 311, Scottsdale, Arizona 85258-3347. Mailed to all members of CEFPI, the Journal is paid for annually as a part of the membership dues. Non-members may subscribe at a rate of: U.S./Domestic, $40 annually for six issues; Canada, $50/Foreign, $55 annually for six issues; $7.50 single issue price.

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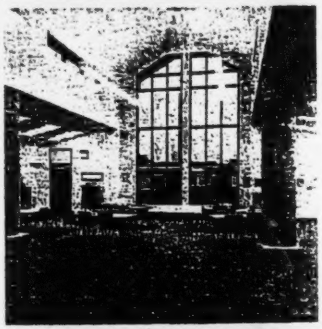
CEFPI 1995
Design Portfolio

Heritage Oak Elementary School

Roseville, CA

The Dry Creek Joint Elementary School District was established in 1876. District enrollment has grown from 113 students in 1977 to 2,200 in 1993.

The comprehensive planning process for the first new school in over a century began in 1980 with a response to an Environmental Impact Report. An agreement with the land developer and city reserved 10 acres for a school site and an additional 8 acres for a park. Because of rapid growth, the District was required to phase the construction of the new school. A portable starter school was opened to house students as permanent classrooms and core facilities were being constructed.

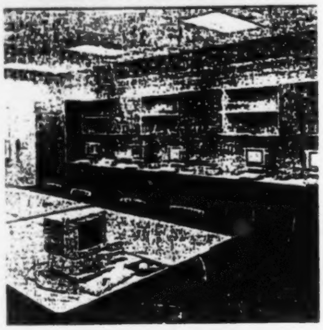


The Educational Specifications were co-authored by a 28-member committee composed of district staff, the Placer County Office of Education, neighboring school district representatives, and representatives from the business community. The document describing 34 specific areas in detail, also included bubble diagrams for each area. Unique considerations included a joint-use agreement with the City Parks and Rec Dept., child care facilities, a convenience kitchen in the multipurpose room, phones in all classrooms, full computer networking capability and cable television in every instructional area with video broadcast capability. The designs effectively addressed the needs of traditional programs yet provided flexibility to meet the future.

The Educational Program for the Heritage Oak School called for a K-5 instructional program, Multi-Track Year Round Educational calendar, community use, on-site child care, and integration of technology.

Classrooms were designed around inner courts providing for hands-on learning and collegial sharing, and flexibility of student desk configurations within the classroom. Multi-track Year Round Education was easily implemented because workrooms are integrated with groups of three classrooms allowing planning and preparation space for off-track teachers.

Community access is encouraged by the campus design including an outdoor amphitheater for presentations during the school day and community use in the evenings. An on-site child care program is operated as a partnership between the District and City. The union of the park and school site has created a true community center in the Heritage Oak attendance area.



District
Dry Creek Joint Elementary School
Superintendent/President
Kelvin K. Lee
Occupancy Date
July, 1992
Grade Level
K-5
Capacity
668/762 YRE
Site Size
10 Acre School Site
8 Acre Park Site

Gross Area
41,604 Sq. Ft.
Area Per Pupil
62.28 Sq.Ft.
Total Project Cost
$5,211,285
Design Team
Dry Creek Joint Ellementary S.D.
Glen Ovard, PhD
Stafford, King & Associates
City of Roseville Parks and Recreation

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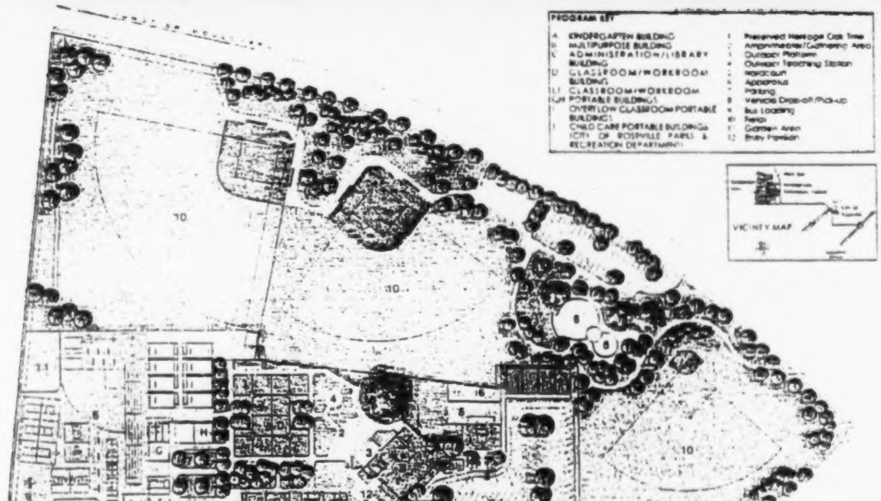
1994 James D. MacConnell Award Winner



PROGRAM KEY
A KINDERGARTEN BUILDING
B MULTIPURPOSE BUILDING
C ADMINISTRATION/LIBRARY BUILDING
D CLASSROOM/WORKROOM BUILDING
E-F CLASSROOM/WORKROOM
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4 Outdoor Teaching Station
5 Hardcourt
6 Apparatus
7 Parking
8 Vehicle Drop-off/Pick-up
9 Bus Loading
10 Fields
11 Garden Area
12 Entry Pavilion
VICINITY MAP
10
10
10
11

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News Articles

Heritage Oak School

Winner of James D. Mac Connell Award

Sacramento Bee Newspaper, September 26, 1994

California Schools: Quarterly Magazine of the California School Boards Association, Winter 1994

SACRAMENTO BEE 8-26-94

Roseville school wins top architectural prize

By Art Campos
Bee Staff Writer

The Dry Creek Joint Elementary School District in Roseville went more than 100 years without building a second school.

But when it did – in 1990 – the district built something special. Heritage Oak Elementary School, like the giant lone oak that graces the middle of its campus, stands alone when it comes to architecture.

The 4-year-old school, which has 1,000 kindergarten through fifth-grade students, was named this week as the winner of the 1994 James D. MacConnell Award, which honors the best-designed schools in the world.

The school was designed by the architectural firm of Stafford, King, Weise and Associates of Sacramento.

"In knowing the caliber of proj-

Please see SCHOOL, page B8

School: Boasts ball fields, day-care center, cable TV

Continued from page B1

ects submitted nationally, we were surprised that a relatively small school like this was being considered for the top honor," said architect Gordon King. "We were more surprised when it went all the way to the top."

District Superintendent Kelvin Lee was ecstatic. "We didn't really expect to win," he said. "Just to be in the competition was great, but to win? We're just pumped about it. This is the ultimate prize for school design and architecture."

Principal Elaine Madsen said teachers and students at the year-round school were overwhelmed when they heard this week that Heritage Oak had walked off with the top prize.

"It's added a new burst of energy to the whole school," Madsen said.

The MacConnell Award was given by the Council of Educational Facility Planners International, a nonprofit organization founded in 1921 to deal with school building issues and architecture. It is based in Scottsdale, Ariz.

Heritage Oak won out over 19 entries from the United States and Canada. Although additional countries have competed in the past, only the United States and Canada submitted entries this year, a council spokeswoman said.

Lee said he was told by one of the three judges who toured Heritage Oak that the Roseville school at 2271 American Drive "had a welcome and warm feeling to it."

Kay Clinton, whose son is a third-grader at Heritage Oak, agreed with the judge's assessment.

"The classrooms are very accessible and you have a beautiful open view of the campus," Clinton said as she picked up her son Thursday. "This really goes with the neighborhood. They were also smart enough to put grass and ballparks at the back of the school. Older schools didn't always do that."

Heritage Oak was built following input from community residents, the city of Roseville, and such businesses as Roseville Telephone Co., Hewlett-Packard and NEC Electronics.

The school and the Roseville Parks and Recreation Department entered an agreement that allows both to share the sprawling ball fields behind the school.

"The school and the park flow together," Lee said. "There are no fences. When looking at the site, you're not aware whether it's a large school with a park or the other way around."

In addition, the city has a day-care center next to the school that allows the children to remain on the grounds until their parents can pick them up late in the afternoon.

The entire school is designed for network computer access, telephones, cable television and intruder alarms. The staff uses a sophisticated voice mail system that includes a homework hotline.

The buildings, trimmed with red brick, are designed so that every three classrooms share an office in which the teacher and students who are on break from the year-round program can store books and supplies.

The school has a multipurpose room that serves as a gymnasium, kitchen, cafeteria and theatrical stage.

Heritage Oak will receive its MacConnell Award on Sept. 17 in Scottsdale during the 71st annual conference of the Council of Educational Facility Planners International.

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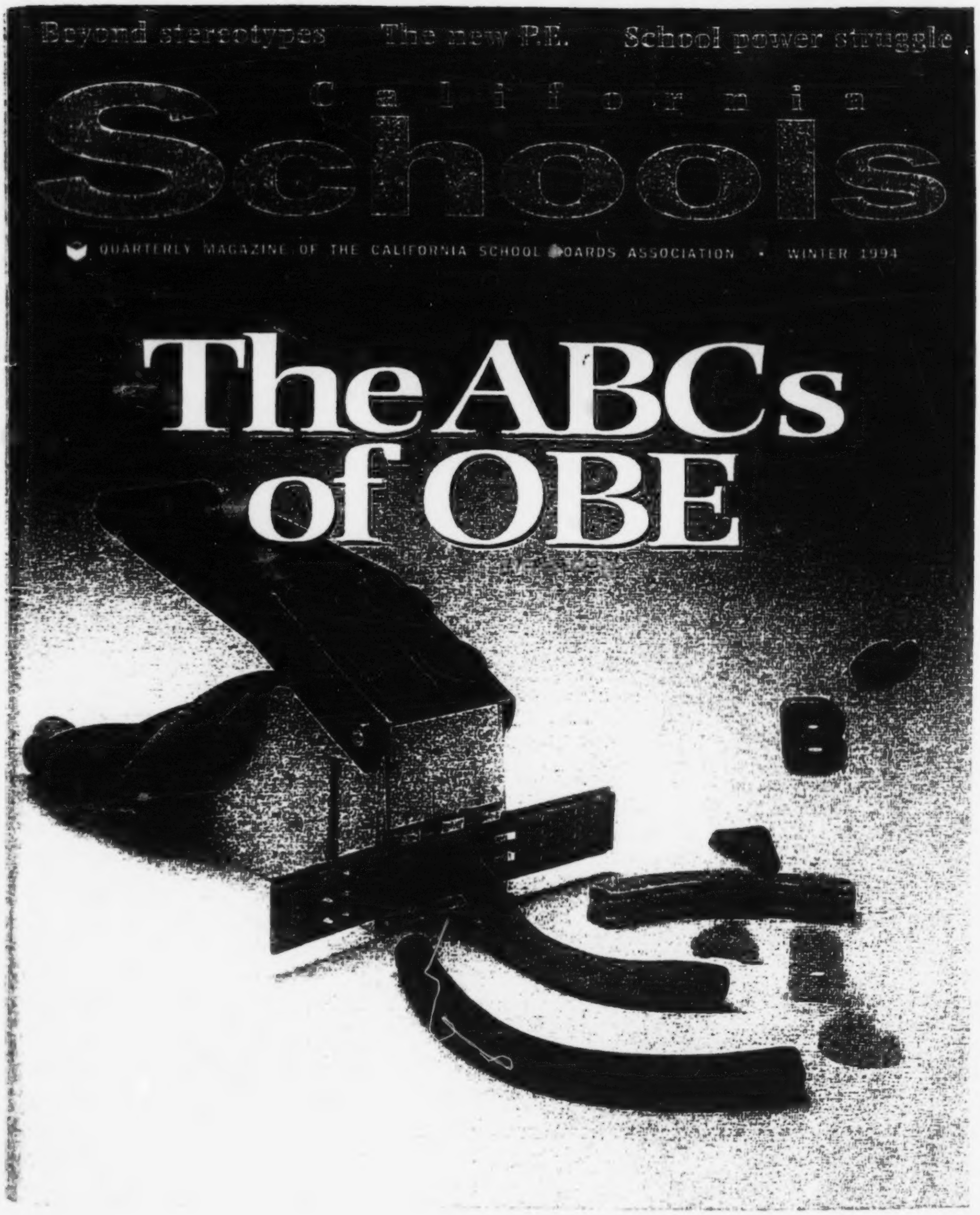

Beyond stereotypes   The new P.E.   School power struggle

California Schools

QUARTERLY MAGAZINE OF THE CALIFORNIA SCHOOL BOARDS ASSOCIATION • WINTER 1994

The ABCs of OBE

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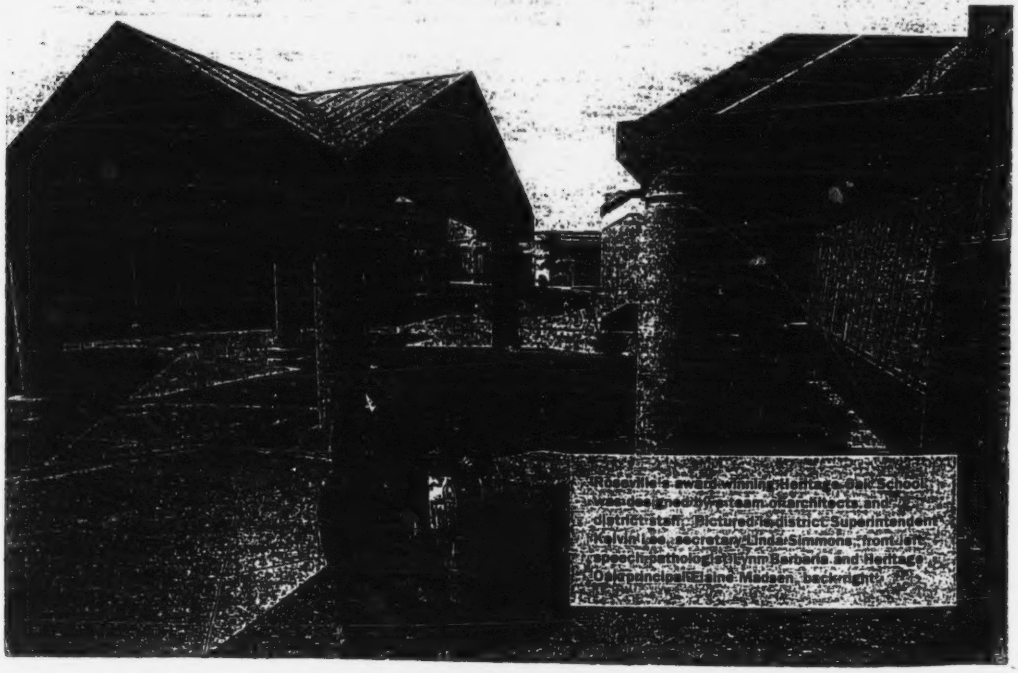
Top-notch school design

Building and designing a school is truly an art form. Facility planners try to create an atmosphere conducive to learning, yet try to make the school aesthetically appealing and useful to the community.

Heritage Oak Elementary School in the Dry Creek Joint Elementary School District in Placer County is a great example of the district staff successfully coordinating a project through the planning process. In fact, the Council of Educational Facility Planners International believes they were so successful, it recently awarded them the coveted James D. McConnell Award for excellence in planning, design and construction of a school project. Architects for the project were Stafford, King & Associates in Sacramento.

"Dry Creek is very pleased about receiving the nomination and being one of the finalists, let alone winning it," says district Superintendent Kelvin Lee. The district maximized the effectiveness of the school facility by working out a joint-use agreement with the parks and recreation district to develop a park and daycare facility. "The community was able to benefit from the joint use of all these three facilities on one site, not having duplication, and also confining all these activities to a particular area," says Lee. "We believe this allows for a true community school and provides ownership for the community and for the school members that has been missing in a number of projects throughout the years."

PHOTO COURTESY OF THE ROSEVILLE PRESS TRIBUNE



Roseville's award-winning Heritage Oak School was designed by a team of architects and district staff. Pictured is district Superintendent Kelvin Lee, secretary Linda Simmons, front left, speech pathologist Lynn Barbaria and Heritage Oak principal Elaine Madsen, back right.

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Section 2

Educational Specifications Process

Dry Creek Joint Elementary School District

Educational Specifications:

Board and District Administration

Committee Members

Table of Contents

General Introduction

Dry Creek School District Mission Statement

DRY CREEK JOINT ELEMENTARY SCHOOL DISTRICT

EDUCATIONAL SPECIFICATIONS

Dry Creek Elementary School

K-5 - Permanent
K-8 - Temporary - with
6-8 - Middle School Alternatives

Dry Creek Joint Elementary School District

2955 P.F.E. ROAD
Roseville, CA 95673
(916) 771-0646

TRADITIONAL EDUCATION SINCE 1876

DRY CREEK JOINT ELEMENTARY SCHOOL DISTRICT

GOVERNING BOARD

NAME	OFFICE
Darrell Webster	President
Diane Howe	Clerk
Charles Barsdale	Member
Thomas Freeman	Member
David Wiley	Member

ADMINISTRATION

Kelvin K. Lee
Superintendent/Principal

EDUCATIONAL SPECIFICATION COMMITTEE

Kelvin LeeSuperintendent
Linda BurtAdministrative Assistant
Mary RigbyKindergarten
Victoria Dowling1st Grade
Tina Sinnott2nd Grade
Tamara Brunner3rd Grade
Roberta Pearson5th Grade
Rich Black7th/8th Grade
Fran Tarson8th Grade
Debra GabriaSpecial Education Coordinator
Elmer RiceHead Custodian
Linda SimmonsSchool Secretary
Bookie BettsLibrarian
Bunny MarshInstructional Assistant and Community Member
Shannon WalkerInstructional Assistant and Parent
Wendy AielloParent Club President
James HerbertSchool Site Council
Diane StankoCommunity Advisory Council

Ann FellowsPlacer Co. Office of Education (Nursing)
Lynn BarberiaPlacer Co. Office of Education (Speech Therapy)
Anne GoatleyPlacer Co. Office of Education (Special Education)
Fred AdamsPlacer Co. Office of Education (Maintenance & Operations)
Shirley LambertRoseville City School District (Secretary
Ruth MichonSan Juan Unified School District (Principal)
Mike DeSousaN.E.C. Corporation (Computer Technician)
Carol TrainerN.E.C. Corporation (Computer Technician)
Ethyl HightowerRoseville City School District (Food Services)
Tom MassieRoseville Telephone Company (Communications)

PLANNING CONSULTANT AND FACILITATOR

Dr. Glen F. Ovard
Brigham Young University

EDUCATIONAL SPECIFICATION COMMITTEE

Kelvin Lee	Superintendent
Linda Burt	Administrative Assistant
Mary Rigby	Kindergarten
Victoria Dowling	1st Grade
Tina Sinnott	2nd Grade
Tamara Brunner	3rd Grade
Roberta Pearson	5th Grade
Rich Black	7th/8th Grade
Fran Tarson	8th Grade
Debra Gabria	Special Education Coordinator
Elmer Rice	Head Custodian
Linda Simmons	School Secretary
Bookie Betts	Librarian
Bunny Marsh	Instructional Assistant and Community Member
Shannon Walker	Instructional Assistant and Parent
Wendy Aiello	Parent Club President
James Herbert	School Site Council
Diane Stanko	Community Advisory Council
Ann Fellows	Placer Co. Office of Education (Nursing)
Lynn Barberia	Placer Co. Office of Education (Speech Therapy)
Anne Goatley	Placer Co. Office of Education (Special Education)
Fred Adams	Placer Co. Office of Education (Maintenance & Operations)
Shirley Lambert	Roseville City School District (Secretary)
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Tom Massie	Roseville Telephone Company (Communications)

PLANNING CONSULTANT AND FACILITATOR

Dr. Glen F. Ovard
Brigham Young University
February 1989

Figure 3. Educational Specifications Committee

February 1989

TABLE OF CONTENTS

	Section
General Introduction	i
Location of School	iii
Kindergarten	1
First Grade Classrooms	2
Second and Third Grade Classrooms	3
Fourth and Fifth Grade Classrooms	4
Sixth, Seventh, and Eighth Grade Classrooms	5
Multipurpose Room and Convenience Kitchen	6
Drama Area in Multipurpose Room	7
Music in Multipurpose Room	8
Library - Media	9
Science Equipment Room	10
Cooking K-5	11
Computer Laboratory	12
Arts and Crafts Kiln Room	13
Resource Specialist Program (RSP)	14
Special Day Class (SDC)/Severely Handicapped (SH) Classroom	15
Severely Handicapped (SH)/Special Day Class (SDC) Classroom	16
Designated Instructional Services Center (DIS)	17
Office - Reception	18
Principal's Office	19
Vice Principal's Office	20
Conference Room	21
Teachers' Work Room	22
Staff Lounge	23
Physical Education - Outdoors	24
Outdoor Education	25
Instructional Supply Room	26
Custodial Storage Room	27
Restrooms	28
Security Supply - Custodial Equipment	29
Grounds	30

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Section
Miscellaneous Items for Consideration 31
Day Care - Extended Care 32
(Not to be charged against District square foot allocation, but on District site.)
Home Economics and Family Living 33
Note to Architect 34

NOTE: The section pages are numbered consecutively. The pages within each section are numbered consecutively (see example).

Section Pages	Pages in a Section
1	1.1, 1.2, 1.3, etc.
2	2.1, 2.2, etc.
3	3.1, etc.
4	4.1, 4.2, 4.3, 4.4, etc.

GENERAL INTRODUCTION

In 1876 a land grant founded the Dry Creek Joint Elementary School District. The single school district to the northwest of the city of Roseville has remained small and rural.

As the 1980's began, signs of development began to appear in the Dry Creek District. Two major electronic firms constructed manufacturing facilities just to the north of the district boundaries.

Land use changes within the district required the school district to develop a facilities master plan in 1984. This master plan matched the plans for residential development with the need for school facilities within the Dry Creek District.

The master plan indicated that within 20 years a student population of over 5,500 students would occur in Dry Creek School District. This enrollment would require up to 8 new schools. In order to meet the demands for new schools, the Dry Creek Board of Trustees began an aggressive funding and planning program.

The results of these efforts are a Mello/Roos Community Facilities District whose bonding capacity equals $30,000,000 in Sacramento County, a similar program in Roseville City, an updated master plan, agreements for long term lease purchase agreements of school sites, and the determination grade level configuration for schools to be built.

During the past several years, the enrollments at the Dry Creek Schools have gone from 222 students in 1936 to 320 in 1987 to 439 in the current year, 1989. With such rapid increases, the Board of Trustees authorized the formation of an Educational Specification Committee to develop the specifications for its first new school in 100 years. The new K-5 elementary school began its life on January 30, 1989 with the first meeting of the Educational Specification Committee. For a temporary period, the school will serve students K-8 and provide some curriculum alternatives for students at the middle school level (6-8). The collective results of the efforts of the committee are found within the cover of this report.

The Educational Specifications written for this school are written to describe a 600 student elementary school with a final grade level configuration of Kindergarten through the fifth grade. During the limited transition period, students in grade six, seven, and eight will attend this school. As a result, certain limited modifications to the instructional program of the school will occur until such time that a middle school campus is opened and the sixth through eighth grade students are transferred to that facility.

The members of the Dry Greek Joint Elementary School District and the Dry Creek Community have mandated that this new school facility reflect the mission statement of the district.

Dry Creek Joint Elementary School District
MISSION STATEMENT

The mission of the Dry Creek Joint Elementary School District will be to:

- Provide a positive educational environment involving the students, staff, community and Board of Trustees.
- Provide District personnel which recognizes the individuality of each student.
- Provide an instructional program that challenges, motivates, and equips each student to be a self-sufficient responsible citizen.

NOTE: *Words in italics are placed into the writing to identify conditions which apply to the grades 6-8 only. This identification will help the architect know the program and facilities that would be shifted to the middle school when it is completed.*

Section 3

Heritage Oak School

Heritage Oak School

School/Park Site

Site Plan

Photos:

Entry Pavilion

Heritage Oak Tree and Outdoor Teaching

Amphitheater

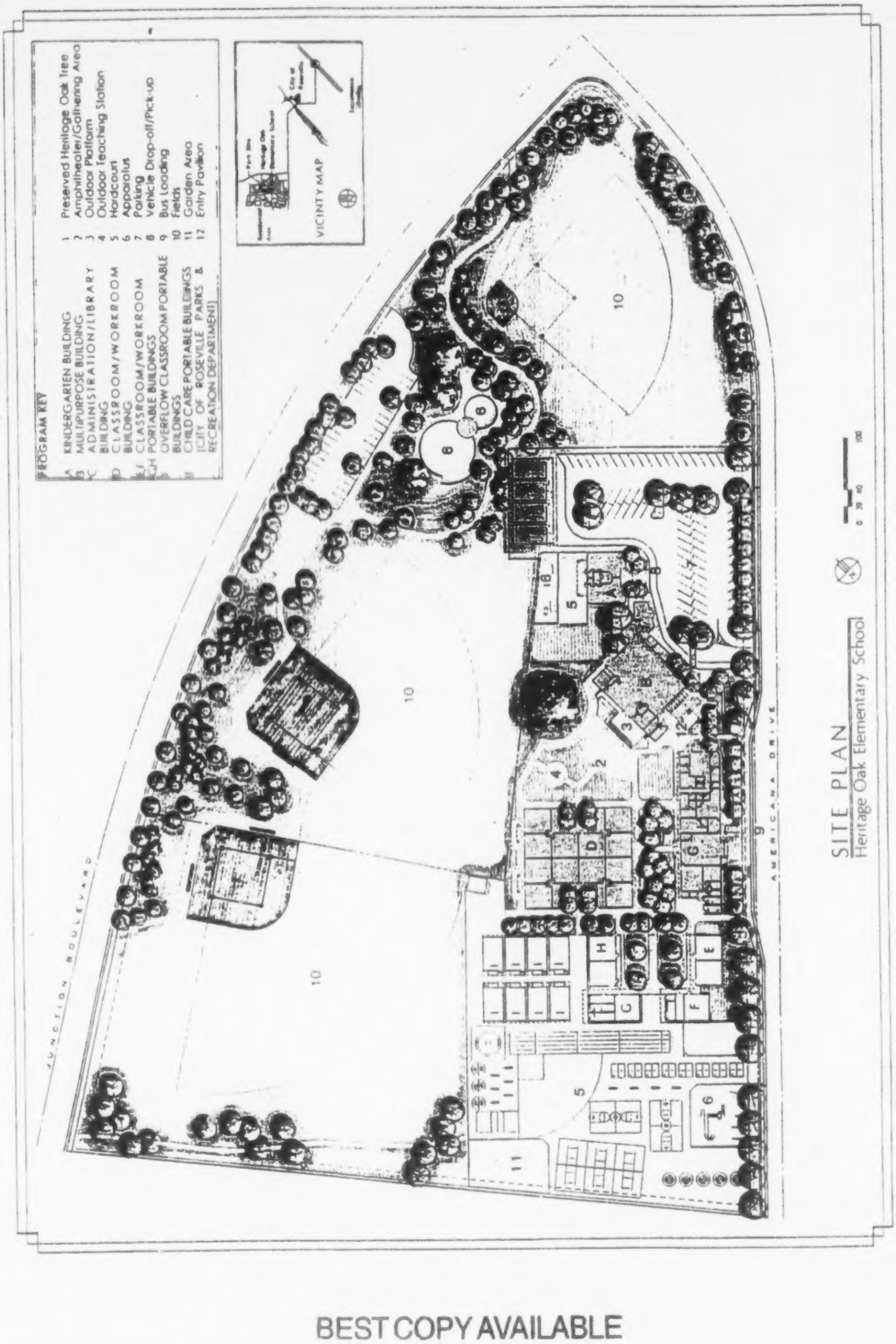
Overall School Site

Educational Specifications:

Physical Education - Outdoors

Outdoor Education

Grounds


PROGRAM KEY
A KINDERGARTEN BUILDING
B MULTIPURPOSE BUILDING
C ADMINISTRATION/LIBRARY BUILDING
D CLASSROOM/WORKROOM BUILDING
E,F CLASSROOM/WORKROOM
G,H PORTABLE BUILDINGS
OVERFLOW CLASSROOM PORTABLE BUILDINGS
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3 Outdoor Platform
4 Outdoor Teaching Station
5 Hardcourt
6 Apparatus
7 Parking
8 Vehicle Drop-off/Pick-up
9 Bus Loading
10 Fields
11 Garden Area
12 Entry Pavilion
VICINITY MAP
JUNCTION BOULEVARD
AMERICANA DRIVE
0 20 40 100
SITE PLAN
Heritage Oak Elementary School

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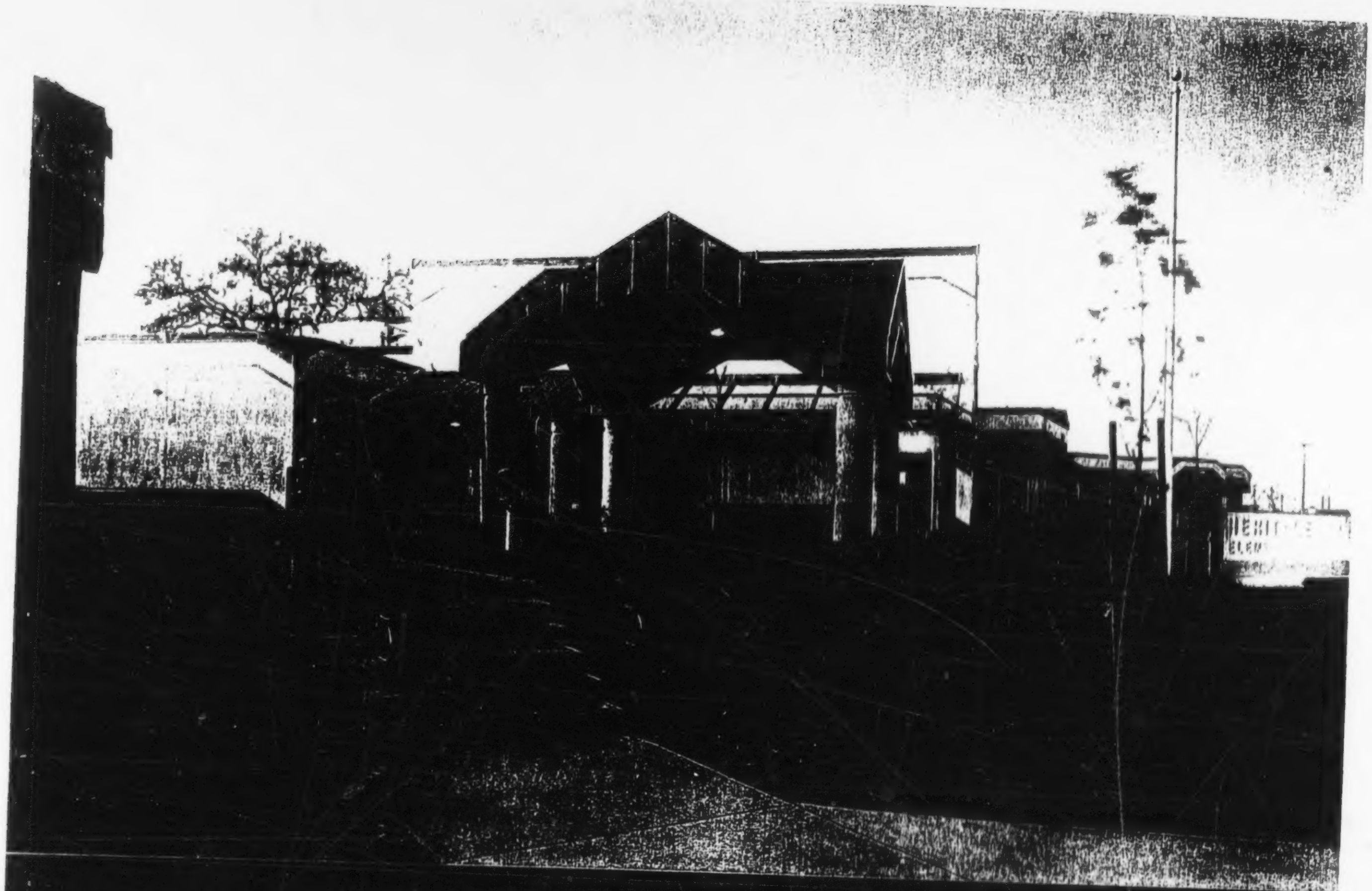

ENTRY PAVILLION

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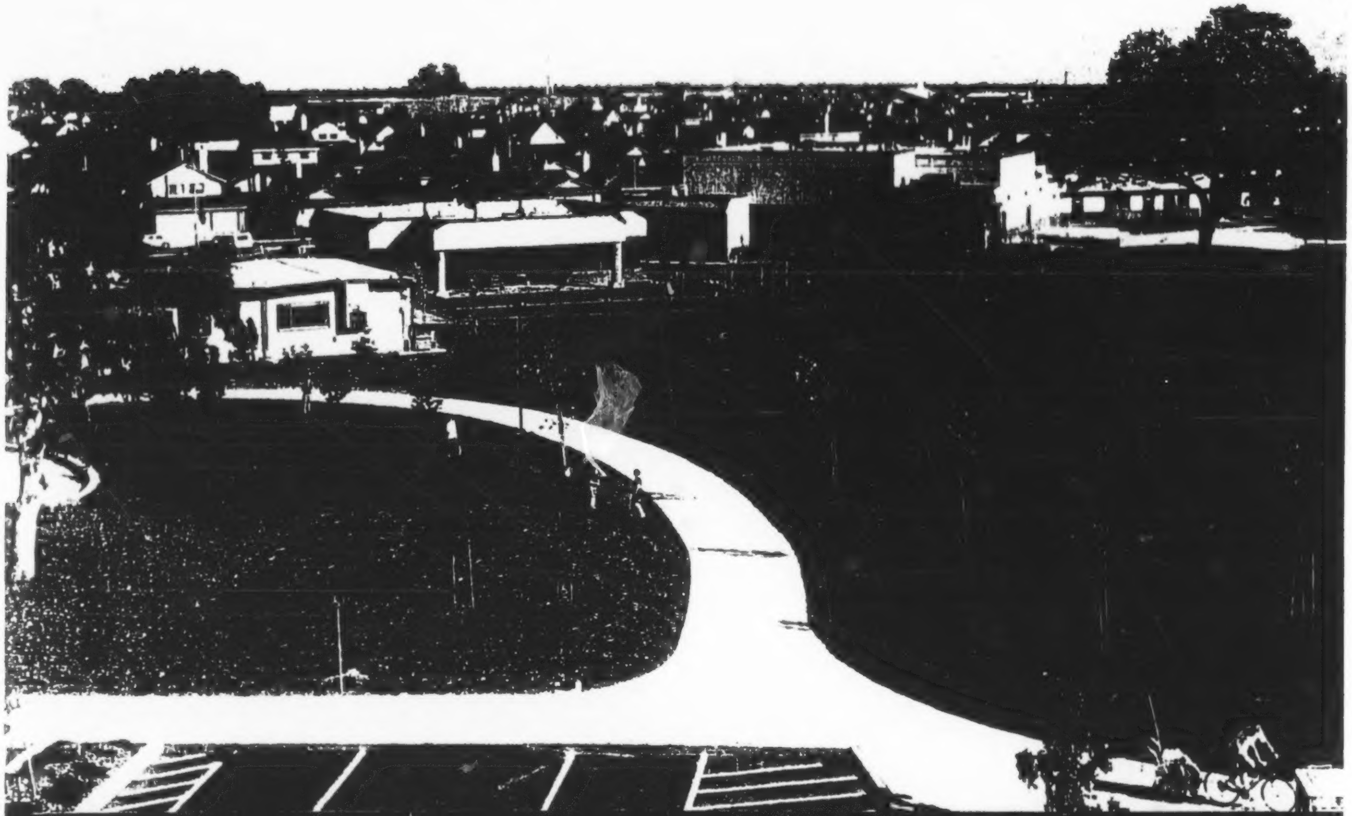
HERITAGE OAK TREE AND OUTDOOR TEACHING

HERITAGE OAK TREE AND AMPHITHEATER



OVERALL SCHOOL SITE FROM THE PARK

PHYSICAL EDUCATION - OUTDOORS

I. INTRODUCTION

The Dry Creek Physical Education programs will include activities for grades K-8. Classes will be co-ed and taught daily. The planned multipurpose room will be utilized during inclimate weather. The program will teach skills as well as provide recreational lifelong activities. Students will not dress down for physical education.

II. CURRICULUM TO BE TAUGHT

The curriculum will focus on physical development and life-long activities.

III. EDUCATIONAL OUTCOMES

The students are expected to:

1. Learn physical skills as well as rules specific to sports and games;
2. Participate in team and individual activities and experiences;
3. Promote physical fitness; and
4. Develop a positive attitude toward physical activity.

IV. DISCERNIBLE TRENDS

The Physical Education program is taught by homeroom teachers. This trend may *diminish in the upper grades through departmentalization* and the advent of the Middle School concept.

Programs will have to be instituted to address physically handicapped students. The program will teach skills as well as life long activities.

V. TEACHING AND LEARNING ACTIVITIES

Fourth through *eighth grade students will be engaged in the following activities:*

1. *Warm up activities physical fitness;*
2. *Tumbling;*
3. *Badminton;*
4. *Volleyball;*
5. *Basketball;*
6. *Flag football;*

7. *Soccer;*
8. *Hand ball;*
9. *Tether ball;*
10. *Softball;*
11. *4 square; and*
12. *Dance.*

Kindergarten through third grade students will be engaged in the following activities:

1. Jump rope;
2. Tumbling;
3. Basic ball skills (throw and catch);
4. Locomotor movement;
5. Circle games and tag;
6. Relays;
7. Dance;
8. Creative movement and aerobics;
9. Team sport skills; and
10. 4 square.

VI. ORIENTATION AND RELATIONSHIPS

The Multipurpose room will be utilized during inclimate weather. It will also be used for food service and a lunch room cafeteria. See Multipurpose room.

Blacktop playground area should be between grass fields and school classrooms.

VII. INTERNAL TRAFFIC

Student traffic should have easy access to playing fields and surfaced play areas without disturbing their classes. They should be able to move to the Multipurpose room without disturbing classes. (See also Multipurpose Room).

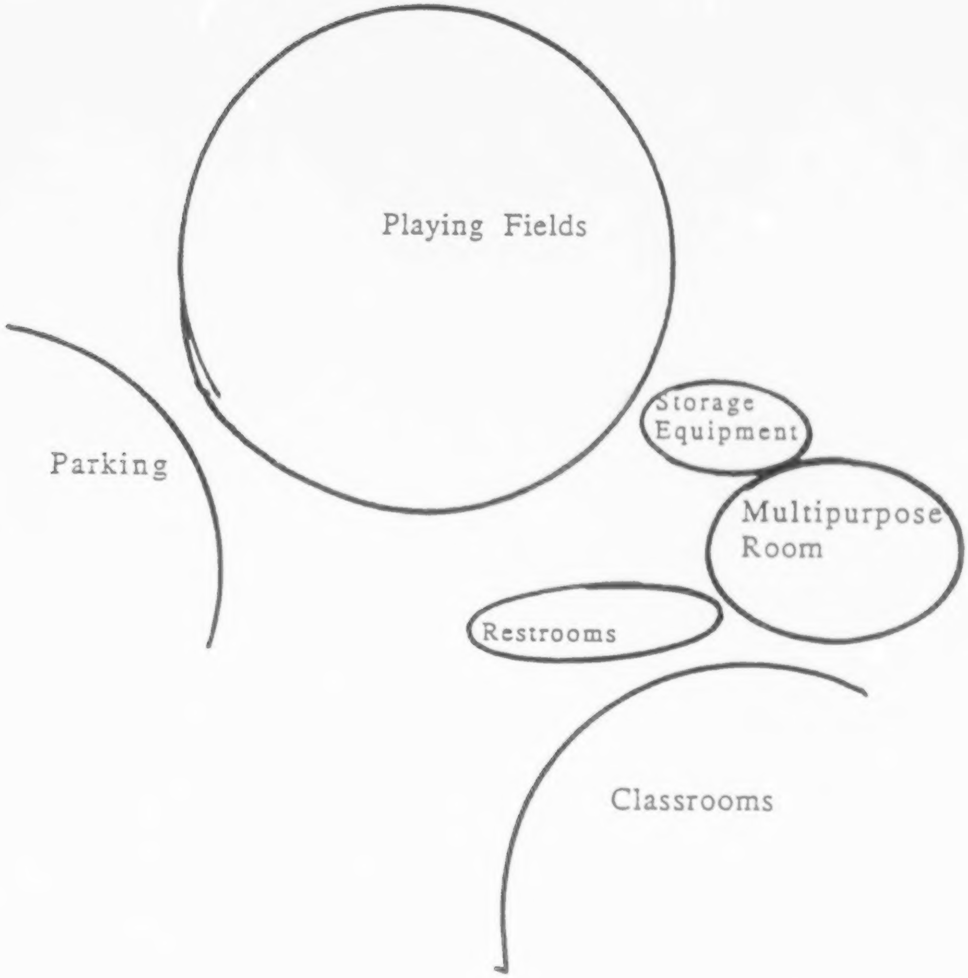
VII. FURNITURE AND EQUIPMENT

Furniture and equipment needed is as follows:

1. *Blacktopped surface to encompass 4 basketball courts with 10 foot standards (4th to 8th);*
2. Blacktopped surface to encompass 4 basketball courts with 8 foot standards (K-3 grades);
3. 2 Soccer fields with goals;
4. 4 baseball diamonds (can be part of soccer fields);

ORIENTATION AND RELATIONSHIP

Physical Education - Outdoors



5. Blacktopped surface to cover 8 hand ball courts with 8' x 12' backboard;
6. Blacktopped area to encompass 6 tether ball poles (K-3 grades);
7. *Blacktopped area to encompass 6 tether ball poles (4-8 grades)*;
8. *Blacktopped area to encompass 4 volleyball courts*; and
9. Blacktopped area for 4 square games 910 total areas).

(See Multipupose room for indoor facilities.)

IX. UTILITIES

Water fountains and bathrooms near blacktop and field areas are required and within view of person on yard duty supervision. A sprinkler system for field is also needed. (See multipurpose room for indoor requirements).

X. SPECIAL REQUIREMENTS

Special requirements are:

1. Backstops at each baseball diamond;
2. Soccer goals on each soccer field; and
3. Team benches on baseball field for each team to seat 20 people.

XI. STORAGE

See Multipurpose room. A room 10' x 10' x 10' to store and checkout P.E. and playground equipment. This room is to have a 1/2 door with counter.

XII. ENROLLMENT

Each class will consist of 28 to 30 student with 600 students utilizing the fields during the course of a day. In emergency growth situations, the school numbers could increase to 750 students.

OUTDOOR EDUCATION

I. INTRODUCTION

Outdoor education includes all types of instruction which requires an outdoor environment for proper implementation. Areas of study include science, gardening, drama, and art.

An outdoor amphitheater could serve as a place for general community use as well as a child centered learning facility.

II. CURRICULUM TO BE TAUGHT

Curriculum includes language arts, fine arts, science and environmental studies.

III. EDUCATIONAL OUTCOMES

Educational outcomes vary depending on the focus for the instruction. Generally, children should develop a greater awareness and appreciation of the outdoors.

IV. DISCERNIBLE TRENDS

Preservation of the environment and ecological concerns are essential for the future of the earth.

V. TEACHING AND LEARNING ACTIVITIES

Teaching learning activities will involve the following:

1. Performing arts will be staged outdoors in an amphitheater. Productions might include readings, plays, recitals, and rallies;
2. Horticultural studies will include the study of soil and plant life through the use of individual raised classroom gardening beds;
3. Science studies might include the study of solar energy, ornithology, nature walks, entomology, animal life, seasonal changes, observing and classifying data, etc.; and
4. Art studies might include rubbings using found materials from outdoors, sketching and painting outdoor scenes, and collages using found materials.

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VI. ORIENTATION AND RELATIONSHIPS

The amphitheater should be situated in a position where stage faces north/south and away from classroom areas. It should accommodate 1/2 of the school enrollment.

Outdoor gardening beds should be easily accessible to classrooms. There should be a plot for each classroom. The gardening beds should be located inside each enclosed cluster of classrooms.

VII. INTERNAL TRAFFIC

Not Applicable.

VIII. FURNITURE AND EQUIPMENT

Raised garden beds for each class with minimum of 35 square feet per class.

Garden equipment and storage for each area include.

1. 3 hoses (1-12' and 1-25' hose);
2. 4 hand spades (child-size);
3. 1 long handled rake;
4. 4 small hand claw tools;
5. 2 adjustable spray nozzles for hoses; and
6. 1 long handled shovel.

IX. UTILITIES

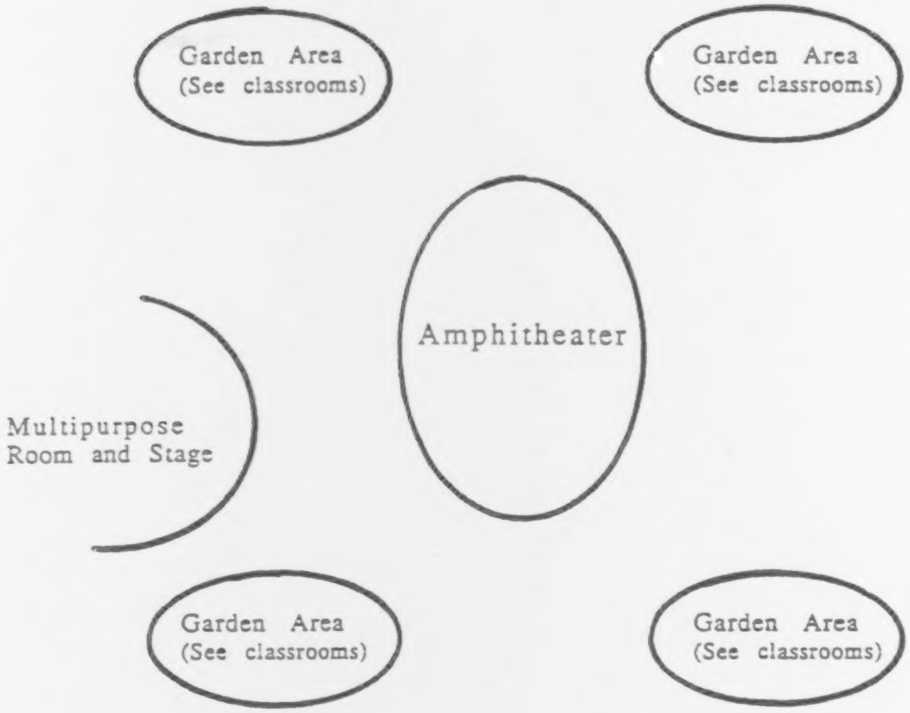
Electrical/outdoor outlets are required for the amphitheater stage and outdoor lighting for amphitheater area for night use.

For garden beds, a water spicket at edge of each bed, with removable on/off valve.

If sidewalks or planting areas are installed prior to installing water for all planting areas, the water pipes should be laid under sidewalks, driveways, blacktop area and stubbed off so that connection can be made at a later date.

ORIENTATION AND RELATIONSHIPS

Outdoor Education



X. SPECIAL REQUIREMENTS

Wheelchair accessibility for amphitheater must be provided. The rear stage area should have a partition or back drop to project the sound toward the audience.

XI. STORAGE

An easily accessible garden equipment storage unit (6' x 12' x 18"). One for every grade level (it could be incorporated in a bench with water proof lid or it could be a unit at the end classroom complex). Back wall should be constructed of pegboard. Sheds should be lockable with a common key.

XII. ENROLLMENT

Amphitheater could serve audience of approximately 1/2 of the school enrollment. The stage to accommodate 50 people and stage properties.

GROUNDS

Landscaping, Playground, Bike Racks, Parking-Transportation

I. INTRODUCTION

Landscaping:

1. Install drip systems in appropriate areas inside security fence (recommend checking city/county for possible funding for using drip system);
2. Adequately sized automatic sprinkler system with potential for future growth;
3. Recommend considering drought resistant plants and trees to be compatible with drip systems;
4. Install conduits under applicable roads, sidewalks and parking lots for future expansion of water and electrical for irrigation;
5. Hydrometers to meter moisture content of soil;
6. Automatic fertilizer/herberside/injection system;
7. Type of grass should be determined after soil analyzation;
8. Landscaping care equipment needed;
9. Diesel powered gangmower (48" swath);
10. Small self-propelled gas mower;
11. Gas powered weedeater;
12. Gas powered hedge trimmer;
13. Miscellaneous shovels, rakes, etc.;
14. Portable fertilizer spreader;
15. Gas powered edger;
16. Gas cans/funnels;
17. Chemical sprayer (hand);
18. Chain saw;
19. 20' x 20' storage container for landscaping equipment away from the school building with a smoke detector and automatic fire sprinkler system; and
20. Security alarm system.

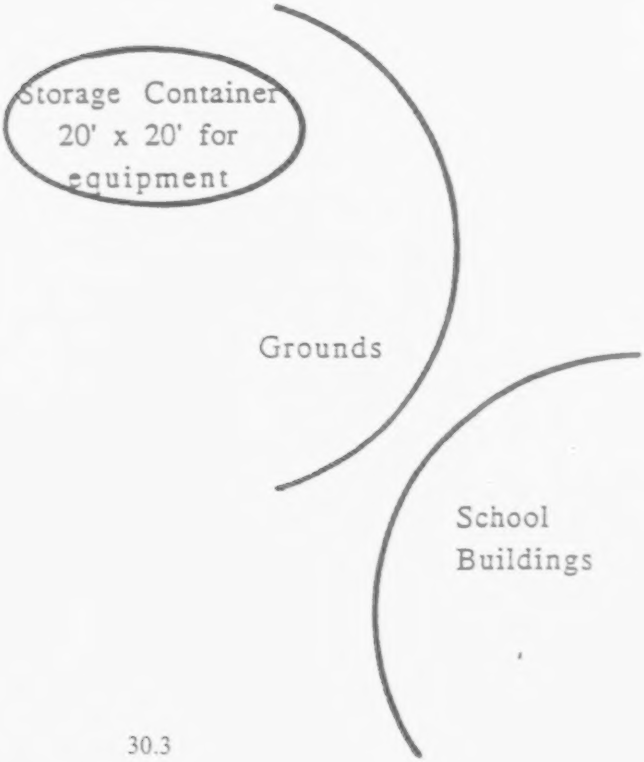
Playground Equipment (see outdoor P.E.):

FIELDS:

1. 4 fields and back stops for softball, permanent at least 2 backstops;
2. 4 portable soccer goals/backstops, 2 field minimum;
3. 440 track around field;
4. Portable bleachers/seating for approximately 100;
5. Team benches, 2 - 20' long for each field;
6. Vandal-proof water fountains on the field at appropriate places for safety; and
7. Security lighting.

ORIENTATION AND RELATIONSHIPS
Grounds

See: Administration
Kindergarten
Special Education
Multipurpose
Outdoor Education
Kitchen
Day Care



BLACKTOP AREAS:

1. 4 basketball courts (full courts), 10' standards (baskets);
2. 4 basketball courts (full courts), 8' standards (baskets);
3. 8 handball courts (8' x 12' backboards);
4. 6 tetherball poles and area, grades K-3;
5. 6 tetherball poles and area, grades 4-8;
6. 4 volleyball courts;
7. 10 four square game areas;
8. Black top area should be between grass fields and classrooms;
9. Traffic should have easy access to playing fields, blacktop play areas, and Multipurpose rooms without disturbing other classes.

BIKE RACK AREAS:

1. At least racks for 50 bikes;
2. Asphalt surface; and
3. Security fence around bike rack.

Parking/Transportation:

AUTO PARKING:

1. 30' ingress/egress road in front of school;
2. Front parking:
   - Staff, approximately 50 spaces;
   - Visitors, approximately 10 spaces;
   - Handicap, as required by local code for both staff and visitors;
3. Rear parking:
   - Staff, approximately 50 spaces;
   - visitors, approximately 20 spaces;
   - Handicap, as required by Local code for both staff and visitors;
   - Buss parking for loading and permanent parking of 3 buses. Ingress - egress and loading and unloading of buses and parent cars bringing students to school must be designed for safety; and
4. Parking spaces will be marked/identified appropriately as "Staff," "Visitors," and "Handicap."

BUS PARKING:

1. Need 30' ingress/egress to get buses safely on and off properly on front of property to street;
2. Need 40' ingress/egress for parking three buses in rear lot;
3. Chain link fence around rear lot of 4' to separate playground area from parking lot with two 4' walk gates and one 15' vehicle gate access on playground side for emergency purposes;
4. Buses will park on perimeter of rear parking lot, designated as such, near the walk gates; and
5. Security lighting as appropriate.

SPECIAL CONSIDERATION:

1. Bus for special education children, specially equipped (SPAB - ED).

Heritage Oak School

Administration and Library Building

Floor Plan

Photo:

Administration Lobby

Library

Computer Laboratory

Educational Specification:

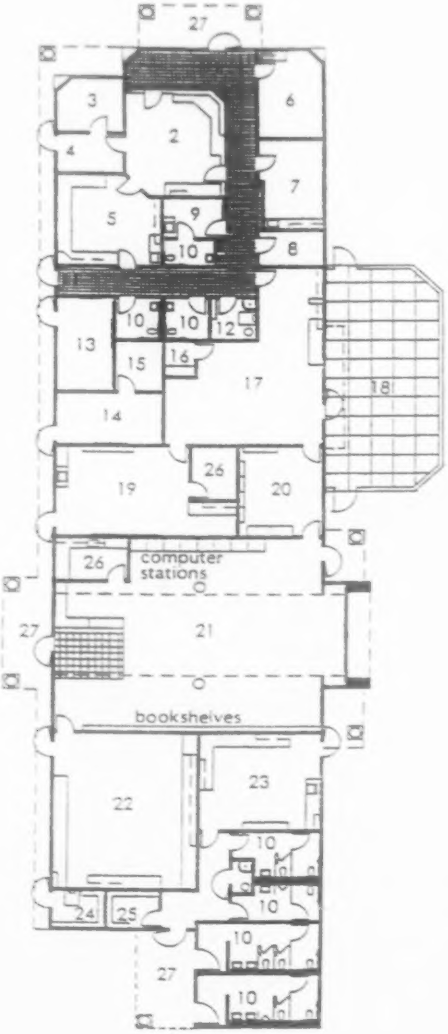
Office - Reception

Library - Media

Computer Laboratory

PROGRAM KEY

1. Lobby
2. Clerical
3. Vice Principal
4. Student Entrance
5. Clerical Workroom
6. Conference
7. Principal
8. Communications and Data
9. Sick Room
10. Restroom
11. Staff Entrance
12. Custodian
13. Speech
14. Staff Conference
15. Nurse/Psychologist
16. Staff Telephone/Conference
17. Teacher's Lounge
18. Teacher's Patio
19. Resource Specialist
20. Audio Visual Professional Library
21. Library - Media Center
22. Computer Lab
23. Teacher's Workroom
24. Art Storage
25. Science Storage
26. Office
27. Covered Entry



FLOOR PLAN

UNIT C-ADMINISTRATION/LIBRARY BLDG.

Figure 8. Floor Plan: Administration/Library Building

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ADMINISTRATION LOBBY

LIBRARY

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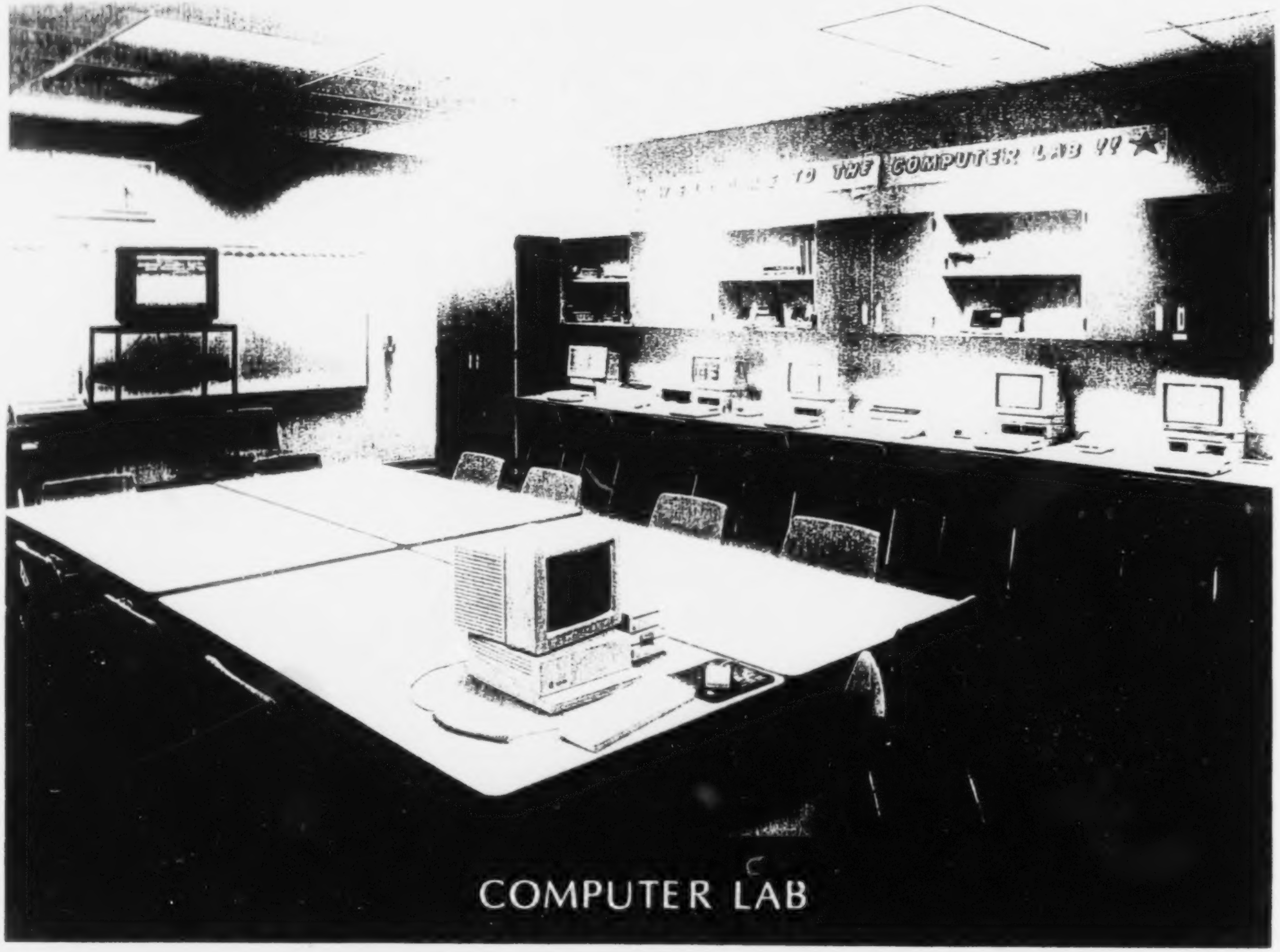

COMPUTER LAB

OFFICE - RECEPTION

I. INTRODUCTION

The administrative suite serves as a main reception area to visitors and as an integral part of the school environment. Therefore, it should be attractive and functional; thus setting the professional standards of the school.

II. CURRICULUM TO BE TAUGHT

The function is a support service to all programs and operations.

III. EDUCATIONAL OUTCOMES

Administrative offices will efficiently and professionally conduct the operations of a school business, serving the needs of student, staff, and the public.

Work space will be designed for optimum efficiency and confidentiality. The office will utilize modern technology and time saving tools.

IV. DISCERNIBLE TRENDS

The office will be designed in such a way to utilize new computer technology; especially in the area of data management.

We see the office becoming more oriented towards the social services, therefore, indicating a need to work more closely with those agencies.

V. ACTIVITIES

There will be a school secretary and a school clerk. Their duties may include: typing, bookkeeping, counting and transferring money to the district office, filing, answering phones, dealing with students, staff and parents, keyboarding and other computer work, using all copy machines, maintaining student records, reception, doing student enrollments and withdrawals, student attendance, supervising waiting area for vice principal/principal, using an adding machine, filling out forms, routine office activities, lost and found, student illness/injury, opening school mail and preparing reports, and other activities as needed.

A vice principal will be assigned to provide administrative support for the principal and manage the range of services which will be provided with year round school, extended day activities and community services.

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VI. ORIENTATION AND RELATIONSHIP

School secretary must have quick and easy access to:

1. Reception counter;
2. Mail, receiving and sending;
3. Visitors;
4. Staff members;
5. Facility for office supplies (not to be shared);
6. View of parking lot, entrance, and playground;
7. Functions adjacent to principal's office;
8. PA system;
9. Students;
10. Deliveries;
11. Sink and first aid supplies; and
12. Files.

VII. INTERNAL TRAFFIC

Office personnel will have continuous movement to and from:

1. Business machines (copier, computer, work area);
2. Nursing facilities;
3. Phones;
4. Counter (3-4' counter);
5. Principal/vice-principal (i.e., Conference room);
6. Restrooms;
7. Reception area;
8. Flow through traffic should be limited by natural boundary with use of carpets, lights, etc.;
9. Immediate access to files; and
10. Central intercom centers.

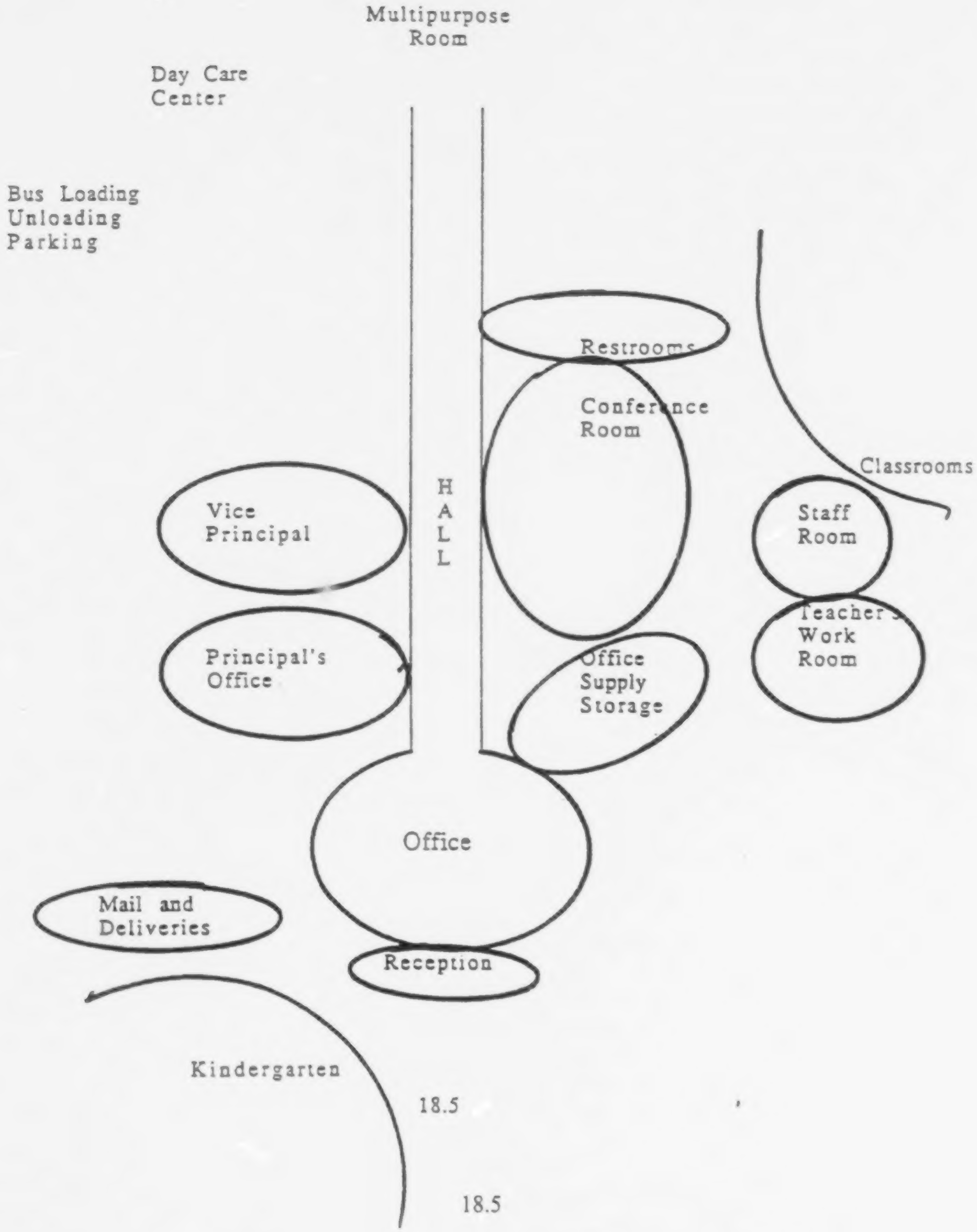
VIII. FURNITURE AND EQUIPMENT

The areas within the office complex will have the following furniture and equipment requirements:

1. Refrigerator-freezer;
2. Lateral file cabinets with locks (30 ft.), one master side bar lock;
3. Paper shredder;
4. Round table with six chairs (4');
5. 6 extra chairs;
6. Copy machine with counter and storage area underneath;
7. Collator;
8. Coffee pot;
9. Microwave;
10. Postage meter with seal and scale;

ORIENTATION AND RELATIONSHIPS

Administration Complex



11. 3 typewriters;
12. Electric pencil sharpener;
13. 3 word processors/computers;
14. 2 adding machines;
15. Office chairs with seat and back padding;
16. 2-3 computers and accessories including printer, modems, etc.;
17. 1 laser printer;
18. Gestetner Mimeograph machine;
19. Scanner for above;
20. Counter (4') at reception area 9 with slots facing reception area for parent/student material);
21. Teacher/staff mailboxes (between office and staff room);
22. 2 cabinets/supply closet with lock;
23. 1 coat closet with lock with coat hangers;
24. Anti-static, stain guarded carpet;
25. Clock;
26. 3 L-shaped desks;
27. 3 secretarial chairs;
28. Paging system for custodian, vice principal, principal;
29. Counter and sink with storage space under sink;
30. Portable wall partitions for office design;
31. 3 wastebaskets;
32. 2 dictation machines;
33. Blinds for windows;
34. Two-way intercom system with access to all classrooms and special facilities and with ability to patch through outside calls;
35. Safe;
36. Cart with wheels for lost and found;
37. Fax machine;
38. Refrigerated drinking water fountain;
39. Trophy case;
40. Bookshelf 4' x 6' with adjustable shelves;
41. Small cot;
42. 1 large trash can;
43. 3 staplers;
44. 1 heavy duty stapler; and
45. Large 3-hole punch.

IX. UTILITIES

The utilities required in the office complex are as follows:

1. Sink with hot and cold water (hot water heater in office) with storage beneath;
2. Electrical outlets every 6 feet on wall and in floor near work stations;
3. Telephone system/switchboard;
4. Heating/Air conditioning with central controls;

5. Security system including fire alarms, fire equipment controlled and accessed to the complete building;
6. Adequate conduit for expansion of future services of technology;
7. Electrical surge protection (computers);
8. Space for three personal computers;
9. Hot water heater located under the sink; and
10. Adequate lighting in work areas.

X. SPECIAL REQUIREMENTS

The office area has the following special requirements:

1. Halon sprinkle system (fire protection);
2. Intercom connected with each classroom with special facilities to patch through outside calls;
3. Tackable walls;
4. Restrooms for office staff with hot and cold water;
5. Windows facing front of school for security;
6. Emergency alarm (panic button) for security - principal/secretary;
7. Handicap access for both students and employees;
8. Front and back doors;
9. Chalkless writing board for message center by teachers' boxes;
10. Voice mailbox (to facilitate messages, as part of telephone system);
11. Vestibule with automatic doors at each end for climate control;
12. Hot water heater located under sink;
13. Announcement board;
14. Heating, ventilation, and air conditioning system; and
15. Fire and security alarm system.

IX. STORAGE

1. Storage closet for office supplies of adjustable shelves to ceiling, double door size (7' tall, 6' wide, 3' deep);
2. Closet for hanging 10 coats;
3. Cabinets with lock for valuables;
4. Walk-in, fire proof, vault for permanent records, cumulative folders, finances and other important papers;
5. Storage for printed materials (bookkeeping, attendance, records, registration forms, 18" deep, 5' tall, 4' wide); and
6. One pegboard inside of cabinet door for holding key storage for about 75 keys.

XII. ENROLLMENT

Main office reception area should hold at least 12 to 15 people comfortably, but it should have seating for 6 people. The reception area should seat at least 6 people, but also provide standing room at the counter for up to 10 people.

LIBRARY - MEDIA

I. INTRODUCTION

The library serves the entire student body and staff, providing information and work/study space in all subject areas. Kindergarten through fifth grade levels will be served on a permanent basis and grades 6 through 8 on a temporary basis, using a variety of media types including books, audio cassettes, videos and films, as well as computers. Facilities include main library, librarian's workroom and a large storage area which houses AV equipment, materials, curriculum and professional library for staff use. The library is intended to be child centered.

II. CURRICULUM TO BE TAUGHT

Curriculum will include instruction on how to use the library. The library will also serve as an auxiliary to all classrooms in their extended curriculum using library resources.

III. EDUCATIONAL OUTCOMES

The main educational outcomes include mastery of basic library skills and reference skills. Increased appreciation of literature, improved reading skills and providing the opportunity through library resources for expanded knowledge of specific subject areas are among the goals. All learning modalities will be addressed, including auditory, visual and kinesthetic.

Professional growth of staff will be enhanced through use of materials in the curriculum area housed in the library storage room.

IV. DISCERNIBLE TRENDS

Discernible trends include greater use of computerized library circulation systems and over-due programs, as well as computerization of card catalogs. Library skills instruction via computers and the use of individual computer centers by students are foreseeable. Accessibility before and after school to students and the community should be considered.

V. TEACHING AND LEARNING ACTIVITIES

Teaching and learning activities include the following:

1. Class and individual instruction in library skills and literature appreciation;
2. Appreciation of literature is enhanced through listening. Librarian reads stories to assembled groups of all grade levels;
3. Drama activities including puppet shows and readers theater;
4. Students learn care of and responsibility for books;
5. Visual arts appreciation through school wide displays; and
6. Computers will be used to provide research data and learning resources available through multi-links with agencies at distance from the school such as other district libraries, public library, universities, state documents, library of congress, Smithsonian Institute.

VI. ORIENTATION AND RELATIONSHIPS

The library should be centrally located on the school campus. Nearby areas should include restrooms, computer lab and teacher's workroom (for use of duplicating and copying equipment). The story pit area should be isolated somewhat to allow for quiet, individual study areas elsewhere. Drinking fountain should be located near check out area. Workroom area should be adjacent to circulation desk, and AV storage/staff library room. Storage area should exit to outdoors to allow easy removal of projectors, etc. to classrooms.

VII. INTERNAL TRAFFIC

There should be an entrance door, near which returned books may be dropped into a secured area for check-in and later returned to shelves. There should also be an exit door located adjacent to the entrance to provide easy flow of classes, into and out of the library. The exit door should be preceded by an anti-theft device. All areas of the library should be visible from this circulation counter. Students will move freely within the library from card catalog, reference areas, book shelves, computer applications, and study desks or tables.

VIII. FURNITURE AND EQUIPMENT

The furniture and equipment required in the library is an indicated below.

1. Adjustable tables and stackable chairs for 30 students (Rhombus, shaped tables);
2. 8 individual study carrels (30" wide x 24" deep) with electrical outlets at each one for lamps and cassette recorders;
3. Sectional circulation desk which includes space for a computer and printer. Free standing or wall mounted locked display cabinet in this area;
4. 5' high perimeter shelving - minimum of 750 linear feet. Three to four wide sections;
5. Portable bookshelves (in sections) 2 1/2' high, a minimum of 150 linear feet that can be placed throughout the library reading room;
6. Enough built-in book supports for ½ of the shelves;
7. Anti-static, stain resistant carpet for entire floor;
8. Tackable wall surfaces or low light transmission windows above perimeter shelving;
9. Thermostat for control of central heat/air;
10. Story pit area (kiva) to hold 30 students with large, tilted wall mounted screen for video projection;
11. A transitional microfiche station;
12. Anti-theft device near exit;
13. 1 two drawer lateral file cabinet for student use;
14. Sectional card catalog for minimum of 50,000 cards;
15. Moveable magazine rack to hold magazines of various sizes;
16. Wall clock; and
17. Fire, security and alarm system.

Librarian/Clerk Workroom

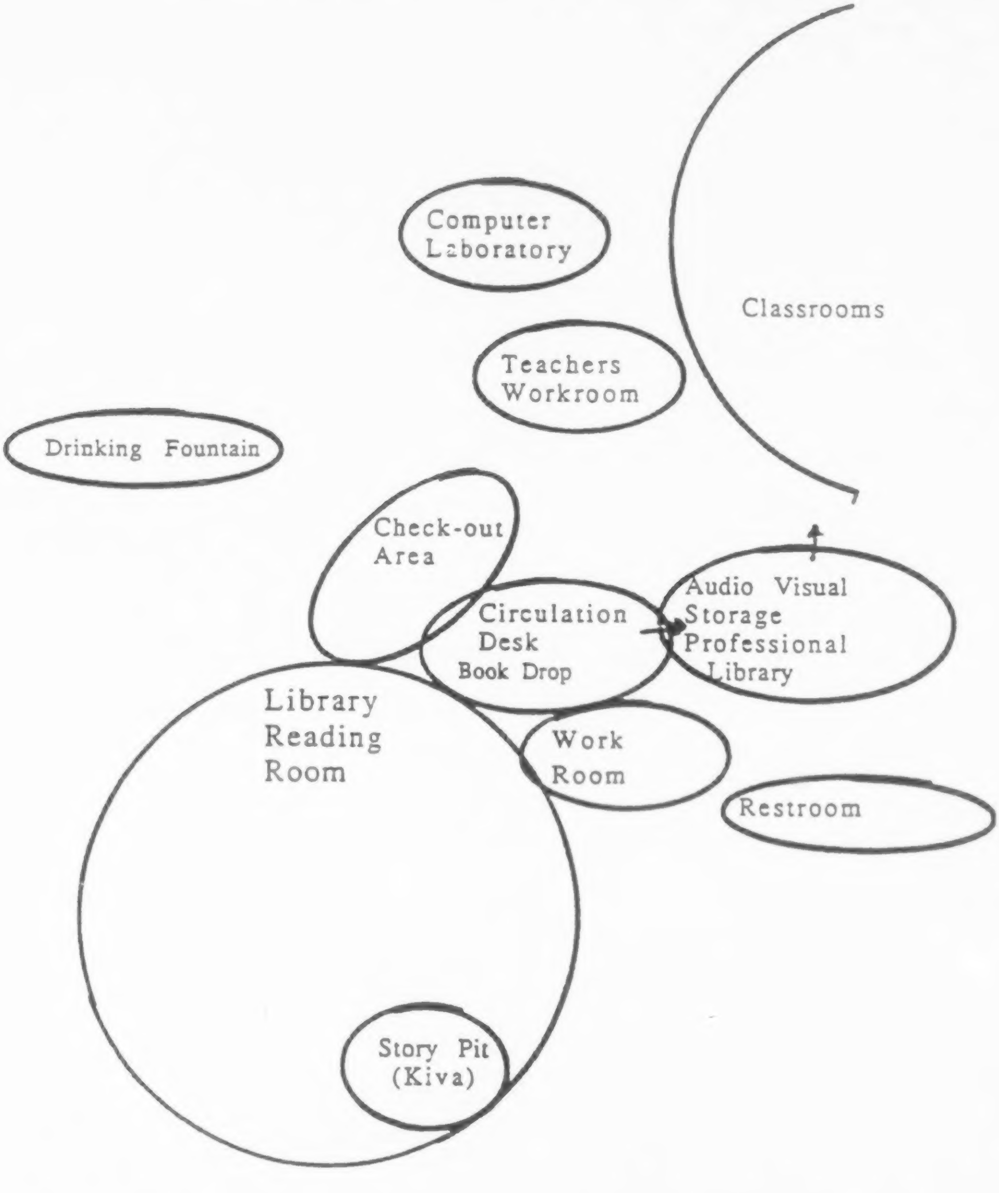
1. Glass wall facing into library;
2. 1 computer/printer and a telephone modem with appropriate furniture;
3. A work table for repairing and processing books;
4. Four drawer file cabinet;
5. Clerk/librarian desk;
6. Lockable coat closet with shelf for personal belongings for librarian;
7. Card catalog with minimum 10,000 card capacity for shelf-list;
8. Poster/chart storage; and
9. 6 VCR machines and 3 optical discs for transmission of tapes to classrooms.

Audio-Visual Storage and Profession Resource Area

1. AV equipment including 1-35 mm slide projector, 1-16 mm film projector, 2 phonographs, 5 filmstrip projectors, and 4 AV carts; 4 moveable bookcarts, shelf space of 1500 student text/workbooks;
2. Lockable storage for computer discs, videos, optical discs, audio cassettes and CD's;

ORIENTATION AND RELATIONSHIPS

Library - Media



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3. Card catalog for loanable materials in storage area; and
4. Shelving space for professional growth library for staff use, thirty two linear feet will be required.

IX. UTILITIES

The utilities needed in the library are:

1. Floor outlets every 10' with wall outlets every 10' (taking care not to place them behind shelving);
2. A sink in the workroom with hot and cold running water;
3. A drinking fountain near entrance/exit (should be outdoors);
4. Telephone type intercom near circulation desk;
5. Computer hook-ups for individual computer centers (student use);
6. Computer hook ups for librarians' work room and circulation desk;
7. Networking for eventual computer hook-ups between library and computer lab, classroom, other district libraries, public library, etc.;
8. Surge control outlets for computers;
9. Electrical outlets at the "pit" projection area;
10. Wall clock;
11. Wiring for 6 VCR machines and optical disc machines to classrooms; and
12. Water and drip irrigation system to the planters in the kiva.

X. SPECIAL REQUIREMENTS

Special requirements in the library include:

1. Handicap access;
2. Budget for software and books;
3. 18' bench surrounding story pit (kiva) area excluding entrance area for safety purposes; and
4. The kiva (reading pit) will be an extension of the north wall with a green house enclosure. The kiva will step down at least 3 carpeted steps and will have a masonry foundation forming the base of the green house wall. A planter will be designed into the top of the masonry wall with a drip irrigation system. The area will be fully carpeted. Light control will be with low transmission glass on the stop surface of the green house and blinds within the duel panel glass. A large screen will drop from the ceiling of the green house near the green house wall with the ability to be used as a large screen TV projection system located in the opposite step down bank. Ramps will provide access to each side of the kiva and a cushion bench will run the length of the first step at a height of 18 inches.

XI. STORAGE

See Furniture and Equipment section.

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XII. ENROLLMENT

Space needs to accommodate up toe 75 people at one time in main library area, 2 to 3 people in librarian's work area, and 2-3 people in the AV storage/curriculum library room.

COMPUTER LABORATORY

I. INTRODUCTION

The computer laboratory will be used by all students in a child centered classroom type setting with direct instruction by the teacher.

II. CURRICULUM TO BE TAUGHT

The curriculum to be taught in the computer laboratory will include basic computer skills according to district guidelines.

Kindergartners will be introduced to basic functions of the computer. By the completion of fifth grade, students will be expected to work independently on the computer, using basic computer knowledge, skills and word processing.

III. EDUCATIONAL OUTCOMES

Students will become familiar with the operation and capabilities of computers. They will receive instruction and training on the computers, according to district guidelines. Students with special language needs, such as ESL, will benefit from computer use in language.

IV. DISCERNIBLE TRENDS

Computer usage is expanding and will continue to grow in the future. Students need to become more knowledgeable about and comfortable with the use of computers on a regular basis.

V. TEACHING AND LEARNING ACTIVITIES

Students will participate in computer hands-on experiences by using a variety of programs. Students will participate in direct teacher-pupil instruction.

Teachers will conduct lectures and explain directions. Teachers will monitor student operation of computers.

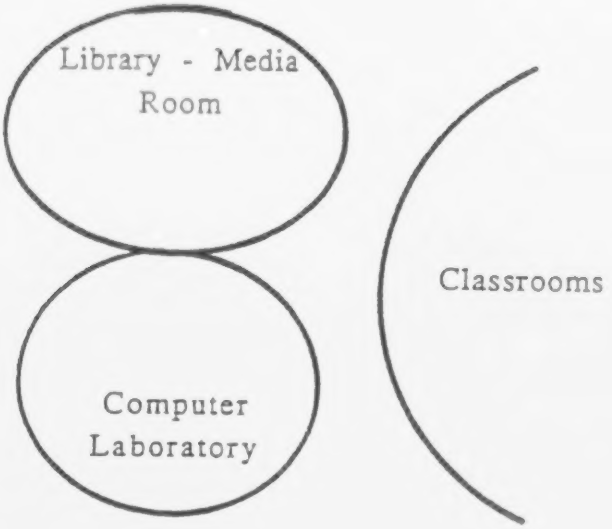
VI. ORIENTATION AND RELATIONSHIPS

The computer laboratory should be adjacent to the library. It should be easily accessible by all classrooms, and wheelchair accessible to all students.

VII. INTERNAL TRAFFIC

ORIENTATION AND RELATIONSHIPS

Computer and Laboratory



12.4

The student flow of traffic will move freely to and from the entrance and the computer terminals. The teacher terminal should be easily accessible.

The teacher needs to move about freely in the room and be able to observe all students from the teaching computer terminal.

There should be no electrical cords in any walkway.

VIII. FURNITURE AND EQUIPMENT

The furniture and equipment required in the computer room follows:

1. 32 computers for student use;
2. 1 computer with large screen TV - 30-32", hooked up to monitor on a high stand visible by all students, for teacher demonstration uses;
3. Computer counter space with laminated top along front and two side walls, to accommodate 20 computers to be 24" high x 20" deep*.
4. 3 computer tables with adjustable keyboard platform, each table to accommodate 4 computers; should measure 12' long x 20" deep; table height should be adjustable;
5. 1 dry erase chalkboard at the front of the room underneath the TV computer monitor;
6. Tackable wall covering to accommodate bulletin boards on remaining walls;
7. Anti-static carpet;
8. 32 chairs - varying heights (10", 14", 16", 18");
9. 6 computer printers, one printer hooked up to every 6-8 computers;
10. Wall clock;
11. Intercom - phone style;
12. Pencil sharpener;
13. 1 computer printer cart to store 2 printers;
14. 1 small sink with hot and cold water with a 5' counter and cabinet underneath, located in corner of one wall near main exit;
15. 1 soap dispenser mounted by sink;
16. 1 paper towel holder mounted by sink;
17. Waste paper can;
18. 1 drinking fountain included in sink;
19. Vertical blind window coverings;
20. Budget for software;
21. 1 counter at rear of room, 10' long x 30" high x 30" deep, to hold 3 printers; and
22. 1 teacher computer desk and chair.

*12" deep shelf, 22" above counters with student computers.

IX. UTILITIES

The computer room has the following utility requirements:

1. Master switch for power at the teachers station;
2. Electrical outlets every 2' with power surge capabilities to operate 20 computers effectively along three walls above the counter;
3. 3 panels of electrical outlets located in the floor, to accommodate 12 computers (computers will be arranged in groups of four, facing front of room, at long tables)
4. 1 electrical outlet for teacher's station in the rear of the room with capacity for the Master switch;
5. Ventilation to circulate air to provide adequate computer and student working conditions. Exhaust system to collect computer emissions;
6. Sink with hot and cold water and drinking fountain located in back of room by the main exit;
7. Switch box for printers;
8. TV demo computer monitor will be located in the front of the room, mounted on the wall with lower edge 7' high;
9. Temperature control to monitor climate at 65-75 degrees; and
10. Electrical outlet strip (every 2 feet) along top of counter at rear wall for 3 printers.

X. SPECIAL REQUIREMENTS

The computer room needs:

1. Tinted windows to reduce heat and glare, placed at a high level around the room;
2. A lockable security system for computer protection, card access;
3. Lighting needs to be designed to minimize glare on computer screens;
4. Budget for software; and
5. Main exit should be in rear of room near sink.

XI. STORAGE

The requirements for storage are as indicated below.

1. Two storage cabinets for storing computer programs; double door with locking capacity; floor to ceiling height, 6' across; and
2. One bookshelf, 3' tall x 5' wide x 14" deep, with adjustable shelves.

All cabinets and bookshelves should be located at rear of room near Teacher terminal between the sink and the printer counter.

XII. ENROLLMENT

The maximum number of students expected to use the computer laboratory at one time is 32, with one instructor and one aide.

Heritage Oak School

Classroom and Workroom

Floor Plan

Photo:

Teacher's Workroom and Year Round Education Storage

Educational Specifications:

First Grade Classrooms

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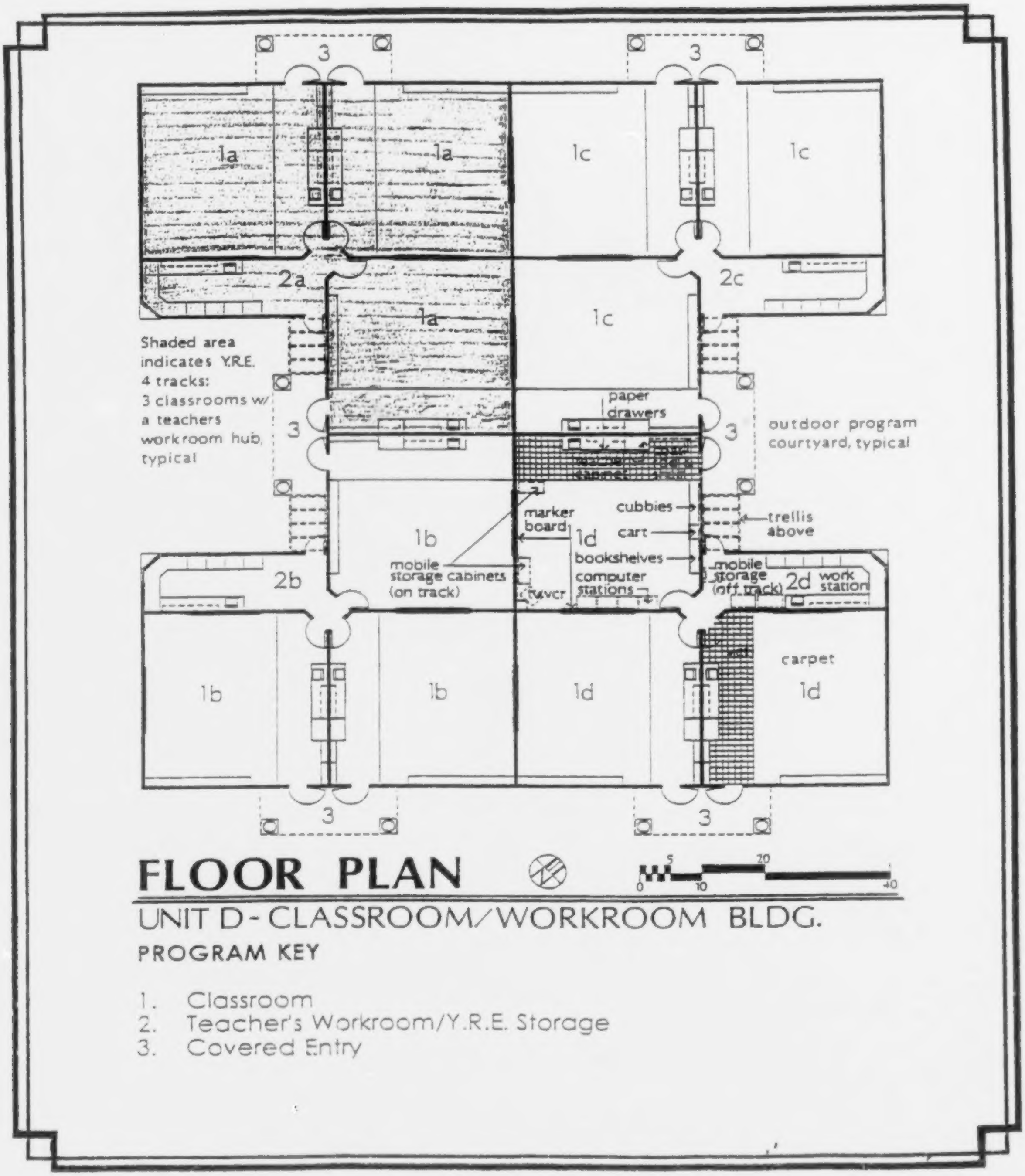
3
1a
1c
2a
2c
Shaded area indicates Y.R.E. 4 tracks: 3 classrooms w/ a teachers workroom hub, typical
paper drawers
teacher cabinet
outdoor program courtyard, typical
marker board
cubbies
trellis above
cart
1b
1d
bookshelves
mobile storage cabinets (on track)
tv/vcr
computer stations
mobile storage (off track)
2b
2d
work station
carpet
0
5
10
20
40

FLOOR PLAN

UNIT D - CLASSROOM/WORKROOM BLDG.

PROGRAM KEY

1. Classroom
2. Teacher's Workroom/Y.R.E. Storage
3. Covered Entry

Figure 6. Floor Plan: Classroom/Workroom Building

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TEACHER'S WORKROOM/ Y.R.E. STORAGE

MULTIPURPOSE ROOM

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FIRST GRADE CLASSROOMS

I. INTRODUCTION

The school will permanently serve K-5 and will be designed to accommodate grades 6 through 8 on a temporary basis until the middle school is constructed. Estimated enrollment will be 600-750, serving a community of predominantly middle class families. These specifications pertain to child-centered classrooms for first grade which will be used for a variety of activities in all subject areas.

II. CURRICULUM TO BE TAUGHT

The curriculum in grade one includes:

1. Language arts: Reading, Writing, Speaking, Listening;
2. Math;
3. Science/Health;
4. Social Studies;
5. English;
6. Physical Education;
7. Fine Arts; and
8. Handwriting.

III. EDUCATIONAL OUTCOMES

At completion of the first grade, students will be able to accomplish all objectives as outlined by the district curriculum standards and the state framework for the specific grade level:

1. Read and comprehend materials in accordance with district objectives;
2. Add and subtract numbers to 12, solving simple story problems;
3. Write simple sentences; and
4. Grade level competency will be achieved in areas of Science, Social Studies, Health, Music, Language Arts, Physical Education, and Art.

IV. DISCERNIBLE TRENDS

The following trends affect the first grade program and facilities:

1. Mainstreaming handicapped;
2. Increased computer use;
3. Integrate thematic curriculum;
4. Literature-based reading programs;
5. Cooperative learning;
6. Dramatic arts in classrooms;

7. Math manipulatives; and
8. Team teaching.

V. TEACHING AND LEARNING ACTIVITIES

Students in this area will be doing desk work, listening to teacher instruction as whole group, some small group work, working in centers, both individual and small group, and watching visuals. Individual and groups will be tutored. Skits and demonstrations will be presented and special projects displayed.

Teachers will provide whole group instruction, circulating among students, and providing individual help. Teachers operate visual aids, including overhead projectors, film projectors, and VCR units. Teachers will be using special displays, maps, and writing surfaces.

VI. ORIENTATION AND RELATIONSHIPS

Classroom areas must be located near restrooms, playground, cafeteria/multi-purpose room and with ready access to office/nurse.

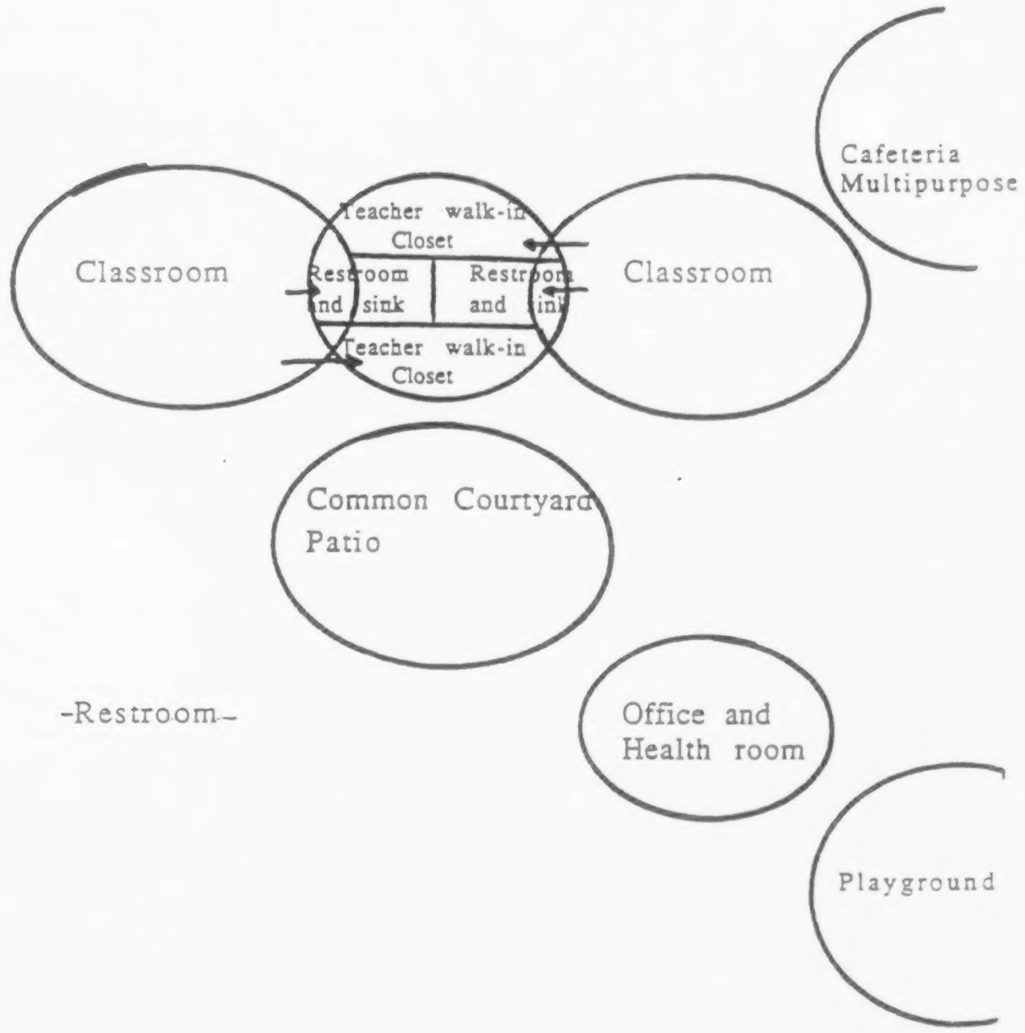
Classrooms should be arranged in clusters with nearby areas for student gardening. Clusters should be enclosed by gates, so common courtyard-patio area is secure.

There should be adjacent common court/patio area with portable picnic tables (2 per classroom). Classroom windows must face the court area for supervision purposes.

VII. INTERNAL TRAFFIC

One exit opens to common courtyard with a second exit on direct opposite wall. The area near doors and back of room/sink area are to be vinyl tile and not to be carpeted. Students will move around the room individually and in small groups but will congregate and sit on the carpeted area for some group instruction.

ORIENTATION AND RELATIONSHIPS
First Grade Classrooms



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VIII. FURNITURE AND EQUIPMENT

The furniture and equipment needed in the first grade classroom are as follows:

1. 15 student desks and chairs (double "table" type);
2. 1 teacher desk and chair;
3. 1 half-round table with cut out to seat 9-10 students and teacher with 9 student chairs;
4. 1 oblong work table;
5. Hanging map holders under high windows and above boards;
6. 1 portable computer table (24" wide, 18" deep) with adjustable height;
7. 1 computer with screen;
8. 9 student chairs to go with the oblong work table;
9. 1 mounted pencil sharpened;
10. Mounted projection screen, tilted, above chalkboard or in corner;
11. 2 storage/demo carts;
12. Dry erase boards (4' x 16') on moveable (sliding) panels (magnetic) which allow alternation, mounted at appropriate height for students and teacher use;
13. Vinyl walls should accommodate push pins and staples easily;
14. A bathroom facility with sink and toilet at lower height to accommodate first graders. Hot and cold running water with soap and towel dispenser and tissue dispenser;
15. A stain resistant, anti static carpet covering two thirds of floor (area close to door and sinks should be non-carpeted);
16. 1 sink appropriate to first grade height with one continuous running water fixture that mixes hot and cold. Drinking fountain adjacent;
17. Soap dispenser, towel dispenser;
18. Wall mounted TV (cable ready), VCR combination;
19. 1 listening station with 8 headphones;
20. 1 wall clock;
21. 1 flag mount and flag;
22. 1 intercom/phone type;
23. 4 easels;
24. 2 portable chart holders;
25. 1 four drawer letter size file cabinet; and
26. 1 shelf next to exit approximately 4' high x 6' long and 12" deep for lunch boxes. Under shelves will be two rows of double hooks with 16 double hooks in each row. One row will be at the outer edge of the shelf edge and the other row 6" lower, located on the wall under the shelf for coats and backpacks.

IX. UTILITIES

1. Electrical outlets every 6 feet of wall space;
2. Set up for listening center (110 volts) side of room;
3. Potential computer hook-ups;

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4. Incandescent lighting and natural lighting or blue fluorescent with dimming capabilities;
5. Cable TV wiring;
6. Electrical outlet in center floor for projector;
7. Thermostat in each classroom; central air and heat; quiet fan; and
8. Large low transmission light windows on one side of room with capability of top opening. High row of windows on other side which open for cross ventilation. Vertical blinds for darkening.

X. SPECIAL REQUIREMENTS

1. 2 outside entrances/exits on opposite sides of room with foresight of design concerning safety or passing children on outside;
2. Wheelchair access;
3. Fire and security alarm system. Alarm system should be chosen with consideration. A movement sensitive system is not desirable since pets may be left overnight. Objects (displays) may also hang from classroom ceilings; and
4. Phone/intercom should be able to take outside calls through office transfer system.

XI. STORAGE

1. Under windows along full wall a counter 30" high and 18" deep with adjustable shelving beneath; alternate portable with permanent shelves; 40" each portable shelf unit for removal in order that counter may be used as work area during school day;
2. Back of room - in wall, between 2 classrooms:
   – 1 walk in storage closet for each classroom with lock (8' wide, 9' deep) with adjustable shelves, 24" deep, floor to ceiling and 8 chart drawers, a movable on castors, on one side of closet;
3. 32 cubbies (cubicles) near exit (each 6" high x 13" deep x 11" wide);
4. 1 roll butcher paper mount; and
5. Thought should be given when designing storage space to adaptability to year-round education. The storage units should have wheels and doorways must be wide enough for ready removal of these units.

XII. ENROLLMENT

There will be 2 first grade rooms with 28 students per room with a predicted enrollment of 600 with expansion during overloading periods.

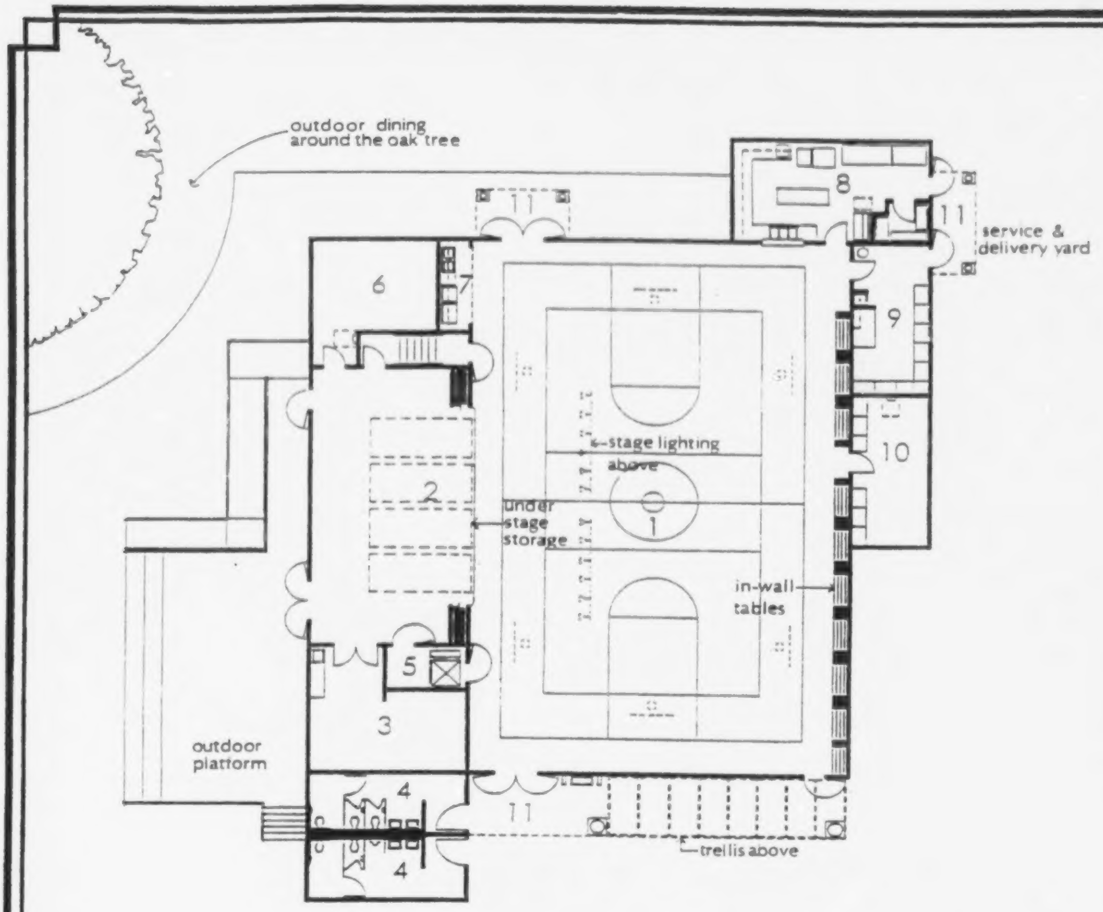
ORIENTATION AND RELATIONSHIPS
First Grade Classrooms

Heritage Oak School
Multipurpose Building
Floor Plan
Photo:

Multipurpose Room

Educational Specifications:

Multipurpose Room and Convenience Kitchen



FLOOR PLAN

UNIT B - MULTIPURPOSE BLDG.

PROGRAM KEY

1. Multipurpose Room
2. Stage
3. Drama Storage
4. Restroom
5. Handicap Lift
6. Music Storage
7. Convenience Kitchen
8. Serving Kitchen
9. Custodial Receiving
10. Multipurpose Storage
11. Covered Entry

MULTIPURPOSE ROOM AND CONVENIENCE KITCHEN

I. INTRODUCTION

The multipurpose room with kitchen is used for a variety of purposes. The main function is a multi use facility. It will be used for lunch room, assemblies, concerts, school productions, school sports, physical education, school movies, banquets, community meetings, PTA fund raisers, and intramural activities. The kitchen is separated by a rollup door and is used for heating and serving food, class projects, and community activities.

II. CURRICULUM TO BE TAUGHT

The curriculum areas served by the multipurpose room includes:

1. Physical Education including basketball and volleyball;
2. Drama;
3. Nutrition/Foods Projects;
4. Art projects;
5. Assemblies;
6. Rainy day recess;
7. Dances;
8. Meeting;
9. Graduation exercises; and
10. Intramural activities.

III. EDUCATIONAL OUTCOME

1. Students will be able to participate in competitive sports in which the entire class can be active. (The sports which are performed are badminton, volleyball, basketball, etc.);
2. Band, choir, drama performances will enhance student skills and appreciation of fine arts;
3. Kitchen will be used to heat and serve meals for the entire school;
4. The stage will allow for band, music, and drama performances, and the possibility of classroom instruction in one of these areas; and
5. Convenience kitchen will be used for community purposes.

IV. DISCERNIBLE TRENDS

In the future the multipurpose room will be used for a gym, cafeteria, performances, community activities, and an emergency shelter facility.

V. ACTIVITIES

Student will be performing the following activities in Physical Education:

1. Basketball;
2. Volleyball;
3. Tumbling;
4. Badminton;
5. Dancing; and
6. Various indoor games.

Teachers will be teaching:

1. Physical education including physical fitness;
2. Drama; and
3. Music, band, *choir*, etc.

The multipurpose room will be used for the following activities:

1. Band concerts;
2. Plays;
3. Talent shows;
4. Meetings;
5. Movies;
6. Community education;
7. Lunches;
8. Fund raisers;
9. *Graduation exercises*;
10. Assemblies; and
11. Emergency services.

Food services activities will include:

1. Heating and serving food; and
2. Consumption of food.

Convenience kitchen activities will include:

1. Heating and cooking food for community uses.

VI. ORIENTATION AND RELATIONSHIPS

The multipurpose room should include inside bathrooms, drinking fountains, and storage rooms. The orientation and relationship include:

1. The multipurpose room should be removed from classroom areas and close to outside fields;
2. The kitchen area should be separated from the main floor of the multipurpose room with a wall and one roll up serving window over the 8' serving counter;

3. There should be an access door to the kitchen area from the outside for delivery service;
4. There also should be a drive-up access to outside door;
5. There should be a door from kitchen to multipurpose room;
6. The multipurpose room should be close to the parking area for easy access for the public;
7. The stage should adjoin the main floor and have double access doors to the rear, with ramps for loading/unloading, and a handicap entrance;
8. The stage should be accessible through a door inside the multi-use building;
9. The stage can be a raised stage with storage underneath, or raised, at 1' higher than Union House School Stage, several steps up (like Union House stage) the width of the stage;
10. A stage door to main floor is not necessary with stepped stage like Union House;
11. Adjacent to stage, outside, should be an amphitheater which opens to a quad area covered by a shade cloth (for hot weather use like Union House School);
12. Stage inside multipurpose room could also have retractable stairs across the front, which could fold into, flush, with wall, allowing more space for activities;
13. Music storage room for instruments, music stands and sheet music;
14. Multipurpose room should have at least four double door entry/exits to outside for convenience and safety; and
15. Convenience kitchen should be adjacent to food services kitchen, with lockable, solid sliding door separating the two rooms.

VII. INTERNAL TRAFFIC

The main floor will seat and accommodate at least 750 and need visibility to the stage. The people will be moving in and out in the facility in five minutes of time. There should be room for a basketball court when the three-tier bleachers are in place.

Classes of students will enter and exit the multipurpose room periodically during the day for instruction.

Some students will buy hot lunches. The students buying hot lunches will need to be served quickly and all students will be disposing of waste. Students will exit the room when dismissed. Approximately 350 students will be seated at one time during lunch.

VIII. FURNITURE AND EQUIPMENT

The furniture and equipment needs include the following:

1. 6 adjustable and retractable basketball hoops to accommodate all age groups;
2. Basketball backboards should be retractable (full court only) and if backboard obstructs visibility to stage with crash pads at the ends of full court;
3. A 3-tier collapsible movable aluminum bleachers to seat 350;

4. 350 folding chairs will be needed, with dollies, to store under stage;
5. Piano on fixed portable rolling stand with safety lock on rollers;
6. 2 volleyball/badminton standards and nets;
7. Clocks in kitchen, stage, main multipurpose room, with cage covering;
8. Stage: PA system with tape deck, phonograph, speakers; curtains, center drawn front to audience, black out; sound proof, sliding door; electrical outlets in front of stage with mike jacks located in floor and on the walls;
9. A 4' x 12' writing surface on stage wall for teaching purposes;
10. Retractable projection screen;
11. Cafeteria:
    fold-up tables and benches to seat 350 students either portable or attached into wall;
12. Large garbage cans;
13. Physical education office;
14. Small scoreboard for basketball games; and
15. Speakers in multipurpose room walls for PA system.

Kitchen:

1. Microwave
2. Two compartment sink 29 x 23 with 30" drainboards on both ends. Overall dimension 89" x 28 1/2" deep with garbage disposal;
3. Convection oven range with hood over head - approximately 36" H x 38" D x 36" W. POWER: 115V - 12 Amps or 220V - 6 Amps;
4. Two door refrigerator for milk and products 53" W x 84" H x 37" D;
5. Hot holding cabinet - approximate size 28" W x 34" D x 70" H. POWER: 2000 watts 110-120V 60HZ 3 Prong plug;
6. Serving counter approximately 8 feet long preferably a step down counter with under counter storage;
7. Counter or table work space approximately 5' x 24" or 30";
8. Access doors to multipurpose room. Outside access door for easy delivery;
9. At least 5 separate 3-prong plug ins; and
10. Small desk area for record keeping.

Convenience Kitchen:

1. Stove with oven;
2. Refrigerator;
3. Deep stainless steel sink with gooseneck faucet and garbage disposal; and
4. 3' counter next to sink.

IX. UTILITIES

The utilities required in the various areas are indicated below.

Multipurpose Room:

1. Lockable electrical outlets placed around the multipurpose room for projectors, special lighting, and sound equipment (about every 12 feet);
2. Drinking fountains and bathroom entrances should be from inside the multipurpose room;
3. Speakers and PA system in the multipurpose room;
4. Electrical outlets every 6' in small office;
5. Intercom;
6. Cable TV/VCR connections;
7. HVAC central controls;
8. Fire and security system;
9. Wiring for scoreboard on wall; and
10. Wiring for speakers from PA system.

Stage:

1. Stage lighting with overhead spots with a dimming system;
2. PA system - electrical wiring on and in front of stage and on sides of stage;
3. Telephone, intercom to classroom/office;
4. Cable TV/VCR connections;
5. HVAC central controls; and
6. Fire and security system.

Kitchen:

1. Telephone in kitchen with intercom;
2. Power to convection oven 115V - 12 amps or 220V - 6 amps;
3. Power to hot holding cabinet 2000 watts 110-120V 60 Hz 3 prong plug;
4. At least 5 separate 3 prong plug ins;
5. Computer terminal;
6. Adequate ventilations (heating and air conditioning);
7. Fire and security system; and
8. Water to sink (hot and cold).

Convenience Kitchen:

1. Power to stove (220 V);
2. Power to garbage disposal 9110);
3. Water to sink (hot and cold); and
4. Two electrical outlets above counter which meet code requirements.

X. SPECIAL REQUIREMENTS

The following special requirements should be planned in the facilities:

1. Retractable backboards in front of stage, at the ends of the full court;
2. Ceilings high enough for basketball and volleyball;
3. Kitchen access door to outside delivery to be large enough for appliances and bulk supplies;
4. All entrances to multipurpose room are double doors, one back stage;
5. Wheelchair access to multipurpose stage and multipurpose room;
6. Garbage area nearby with easy access to area from kitchen and lunch area:
7. Stage should be on one end of full court;
8. Walls and ceilings should be of material to produce high quality acoustics, but not damaged by balls; and
9. Convenience kitchen door should be solid, sliding door.

XI. STORAGE

Kitchen storage is necessary under counter to house 18" by 26" by 4" deep pans about 10, and 12" to 14" kettles (about 10). These shelves should have doors. Six sets of cupboards, one above sink, 3' x 4' adjustable shelves on all. Lockable closet for parents club with shelves floor to ceiling 4' x 5'. Storage must be accessible to main playing floor area for the following:

1. Lockable racks to store various types of balls;
2. Mats - tumbling (under stage);
3. PA system;
4. Volleyball/badminton standards and nets;
5. Scoreboard control box;
6. Tables and benches;
7. Bleachers;
8. Folding chairs (under stage or closet if stage is low);
9. Bats;
10. Bases;
11. Jumpropes;
12. Portable record player or tape deck;
13. If stage is raised, area underneath for folding chairs and tumbling mats;
14. Adequate closet storage for small props (6' x 8') and costumes (lockable) backstage;
15. Lockable Physical Education instructor/teacher's room (office) 12' x 12' to include storage of small Physical Education equipment (see Equipment);
16. If available, loft storage with stairs for access; and
17. Convenience kitchen storage should include closed, cabinet space above sink and stove, and below sink and counter.

XII. ENROLLMENT

Approximately 60 for Physical Education instruction.

Approximately 350 for food service, two shifts.

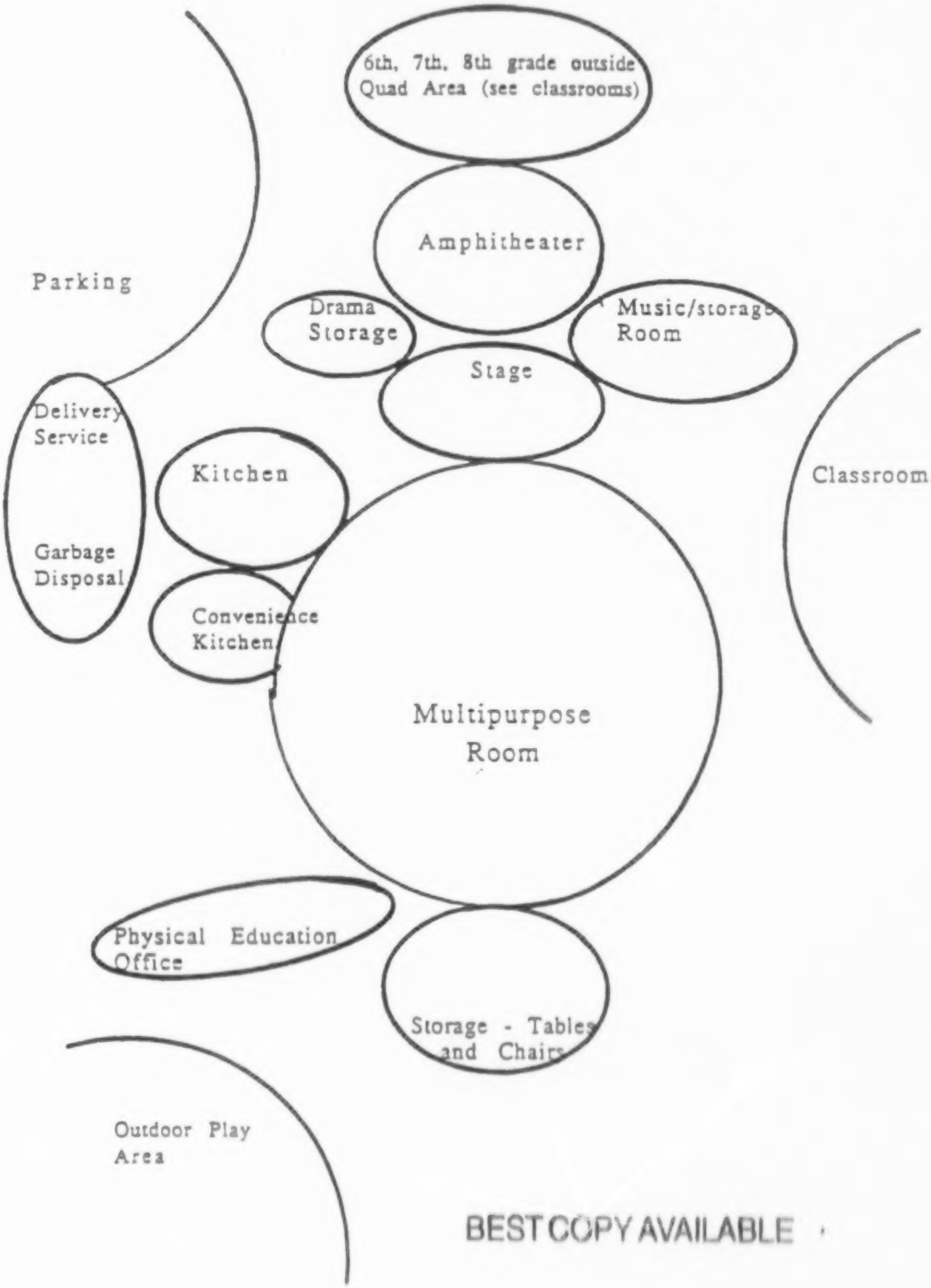
Approximately 350 for public events.

Approximately 650 for assembly.

The stage should accommodate small drama and school productions or band or choruses.

ORIENTATION AND RELATIONSHIPS

Multipurpose Room



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